Teacher's Tool Kit

Introduction Letter

The World Anti-Doping Agency (WADA) is pleased to introduce its Teacher's Tool Kit. This Tool Kit contains a series of lesson plans that can be used by classroom teachers to introduce students to issue of doping, or drug use, in sport.

About WADA

The World Anti-Doping Agency (WADA) is the international independent organization created in 1999 to promote, coordinate, and monitor the fight against doping in sport in all its forms.

Composed and funded equally by the sports movement and governments of the world, WADA coordinates the development and implementation of the World Anti-Doping Code (Code), the document harmonizing anti-doping policies in all sports and all countries.

How to use the Teacher's Tool Kit

This Tool Kit contains a series of lesson plans and activity ideas for introducing your students to the issue of doping. The intention is to use sport, sport values and doping as themes for putting into practice the life-long learning skills that you would like your students to build, including critical thinking, collaborative learning, reading comprehension, as well as oral and written expression.

The Tool Kit is divided into material for students 10-12 years of age (Youth) and for students 13-16 years of age (Teen). For each age group, a series of lessons and activities are suggested, which can be used independently or as part of a larger module.

Why discuss doping with students who are not elite athletes, who may never have to worry about being drug tested?

There are many reasons to discuss doping.

First, the anti-doping community believes that, by instilling anti-doping and fair play values in children, before they are exposed to drug use, they will be less tempted by doping substances.

Secondly, although your students may not be tempted by substances for performance enhancing purposes, they may be tempted to use substances such as supplements and medications to help with their body image (lose weight, put on body/muscle mass).

Finally, although the themes that we are using for these lessons revolve around sport, the values being taught go beyond sport.

Please be advised that this information is subject to change at anytime and that in case of any discrepancy between this information and the World Anti-Doping Code, the Code prevails. Always check with your International Federation, National Anti-Doping Organization or National Federation for the most up-to-date anti-doping regulations.

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Youth

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Youth Unit 1: The Spirit of Sport

Introduction

In this unit, students will be introduced to the concept of the Spirit of Sport. Students will be encouraged to think about the importance of playing fair and what behaviours and values are associated with the Spirit of Sport. At the end of this unit, students will draft and sign a Play True pledge.

What topics will be covered in this unit:
- What is fair play?
- What is the Spirit of Sport?
- Applying the values of the Spirit of Sport to all aspects of life

What activities will be presented in this unit:
- Consider "play" behaviours associated with the Spirit of Sport Values
- Consider "daily life" behaviours associated with the Spirit of Sport Values
- Identify Spirit of Sport Values in a text
- Draft and sign a Play True pledge

What resources are included in this unit:
- *Spirit of Sport Values* Worksheets (completed table and blank table)
- *Spirit of Sport in Everyday Life* Worksheets (completed table and blank table)
- *Putting the Spirit of Sport into Action* Worksheet

What skills will be put into practice in this unit:
- Critical thinking
- Reading comprehension
- Written expression
- Oral expression
- Collaborative learning

Lesson 1: Introduction to the Spirit of Sport Values

Purpose: The purpose of this lesson is to introduce students to the concept of the Spirit of Sport.

Materials included:
- *Spirit of Sport Values* Worksheet (completed table and blank table)

Learning objectives:
- To acquire knowledge of the Spirit of Sport principles within the context of sport and physical activity
- To make connections between Spirit of Sport values and other aspects of the students' lives

What is the Spirit of Sport?

Background: Anti-doping programs seek to preserve what is intrinsically valuable about sport. This intrinsic value is often referred to as the "Spirit of Sport." The Spirit of Sport is the celebration of the human spirit, body and mind. Doping is fundamentally contrary to the Spirit of Sport.

– **Activity:** Explain to students that there are 11 core values that characterize the Spirit of Sport
  - Ethics, fair play and honesty
  - Health
  - Excellence in performance
  - Character and education
  - Fun and joy
  - Teamwork
  - Dedication and commitment
  - Respect for rules and laws
  - Respect for self and other participants
  - Courage
  - Community and solidarity

– But what does all this mean? Have students reflect on these values by:

1. Having students use the blank Spirit of Sport Values worksheet to provide examples that support and are contrary to each of the 11 Values that characterize the Spirit of Sport.

   Note: This worksheet can be completed in written format (individually or in small groups) or simply discussed orally (in a plenary session or in small groups).

2. Providing students with the completed table and having students discuss.

   Note: This worksheet can be discussed in a plenary session or in small groups.

Spirit of Sport Values	Good Spirit of Sport Behaviours	Acts Contrary to the Spirit of Sport
Ethics, fair play and honesty	I play within the rules even though I know that I will not get caught if I cheat.	I do not respect the rules of the game. I lie when I am caught cheating.
Health	I listen to my body. I eat well, get enough sleep and I do not overdo it.	I take risks when I play sport. I play even when I am hurt or am tired.
Excellence in performance	I always try my best. I am happy when I win, but do not make my opponent(s) feel badly.	I give up when I am losing or not playing well. If I am not playing well, I become aggressive towards my team mates and opponents.
Character and education	I show a good example to my team mates about playing fair. I am a good role model for younger players. I always stay in control even when I am losing or not playing well.	I encourage others to cheat with me or not to play fair.
Fun and joy	Playing my favourite sport makes me happy. I always have fun, whether I am winning or losing.	I often get aggressive when I am playing, which makes sport less fun. I get angry and sad. I sometimes hurt others (physically or emotionally). I play to win. I don't find playing fun any more.
Teamwork	I know that I cannot win alone. We win as a team and we lose as a team.	I do things on the field that make me look good but isn't really good for the team. I get mad at team mates because they aren't as good as me.
Dedication and commitment	I am dedicated to my sport and team. I go to all practices and games. I help younger kids play.	I only play in games. I do not practice or train. I don't play unless I think we are going to win.
Respect for rules and laws	I know the rules. I respect the rules and the officials.	I yell at officials and coaches. I challenge calls made by referees. I do not respect authority.

Spirit of Sport Values	Good Spirit of Sport Behaviours	Acts Contrary to the Spirit of Sport
Respect for self and other participants	I don't let others treat me badly. I help my team mates and opponents up if they fall.	I yell at my team mates and opponents. I am rude. I am aggressive.
Courage	I speak out when I know that my team mate or opponent is not playing by the rules.	I do not say anything when I see a team mate or opponent breaking the rules or cheating.
Community and solidarity	I leave the competition on the field. I am friends with my opponents off the field. I speak out when I see something that isn't right.	I discriminate against other players who are different from me. I do not play with people who are not as skilled as me. I do not talk to opponents off the field.

Debrief: Once students have had a chance to reflect on the Spirit of Sport Values, ask students to think about some examples of behaviours or stories that embody the Spirit of Sport Values. These could include stories or examples from the school yard, playground or sport competition.

Lesson 2: Playing within the Spirit of Sport Values

Purpose: The purpose of this lesson is to identify the Spirit of Sport values in real sport stories.

Material included:
- *Putting the Spirit of Sport into Action* Worksheet

Learning objectives:
- To identify the Spirit of Sport values in real stories
- To think critically about the role the Spirit of Sport values play in sport

Spirit of Sport Stories

Background: The International Fair Play Committee awards individuals or teams for their commitment to fair play values. The Committee has three awards –

1. Pierre de Coubertin Trophy: Awarded for an act of fair play to a contender who sacrificed or compromised his/her chances of winning by complying not only with the written rules of the sport, but also with the 'unwritten' ones.

2. Jean Borotra Trophy: Awarded for a general attitude of sportsmanship all along a sports career, marked by an outstanding and constant spirit of fair play.

3. Willi Daume Trophy: Awarded for an activity aimed at promoting fair play, for example organization of national or local campaigns, lectures, books, articles, reports or comments in the media.

Some examples of recent winners include, Russian gymnast Aleksey Nemov who calmed fans after he was given a low score at the 2004 Athens Games, New Zealand rugby player Tana Umaga who stopped during a match to help an injured opponent and the Danish football team who purposely kicked the ball wide when they were awarded a penalty kick after their Iranian opponent picked up the ball to hand it to the referee when a fan blew a whistle.

For more information on the International Fair Play Committee, visit their Web site, which also includes all award recipients: <http://www.fairplayinternational.org/>

– **Activity:** The following stories exemplify the Spirit of Sport ideals. Using the 11 Spirit of Sport Values listed below, ask students to explain why these stories are good examples of the Spirit of Sport.
  - Ethics, fair play and honesty
  - Health
  - Excellence in performance
  - Character and education
  - Fun and joy
  - Teamwork
  - Dedication and commitment
  - Respect for rules and laws
  - Respect for self and other participants
  - Courage
  - Community and solidarity

Note: You may ask students to identify the ideals in all stories or assign one story to an individual or group of students. The stories and the 11 Spirit of Sport Values are included in worksheet format. An answer key is included below. As long as the students are able to make a clear and convincing connection between the value and the story, the response can/should be accepted. You may wish to include a local example(s) of Spirit of Sport in action, whether at the community/club level or the elite sport level.

Trading a silver medal to save a life
1988 Summer Olympics

Lawrence Lemieux was an Olympic sailor from Canada. During the 1988 Olympics, Lawrence was on his way to winning a silver medal, when he noticed that one of his competitors had fallen out of his boat. A sailor from Singapore was injured and having trouble keeping his head above water. Lawrence abandoned the race to save his competitor.

Lawrence did not win a silver medal in that race. He finished 22nd. During the closing ceremonies, Lawrence was given the Pierre de Coubertin Medal for Sportsmanship.

Answer key:

- Respect for others: Lawrence put saving his competitor's life over winning a medal.
- Courage: It took courage Lawrence to risk his career and possibly his own life to save the life of his competitor.
- Character: Lawrence is an excellent role model.

Jumping in to help a competitor in need
1936 Olympics

Jesse Owens was a very successful track and field star from the United States. Jesse's main competitor at the 1936 Olympics in Germany was Luz Long. Luz was a German athlete and was favoured to win a gold medal in the long jump.

Jesse fouled in his first two jumps. If he crossed the jumping line again he would be disqualified. Jesse was really discouraged. This was a lot of pressure on him.

Luz went over to Jesse. He introduced himself. Luz suggested that Jesse try jumping from a spot several centimetres from the line. Since Jesse almost always jumped further than the minimum required distance, he would be sure to qualify for the next round.

It worked! Jesse did not foul on his third jump. Jesse ended up winning the gold medal. Jesse even beat Luz's record.

Luz was the first person to congratulate Jesse on his victory. The two men walked off the track arm-in-arm.

Answer key:

- Dedication to the sport: Luz Long put helping an opponent with his technique ahead of coming first.
- Respect for others: Luz helped his opponent and was the first to congratulate him when he won the competition.
- Courage: It took a lot of courage for Luz to risk losing the competition by helping Jesse.
- Character: Luz is an excellent role model, showing that winning is not everything, and that it is key to have fun and play/compete to your best ability and help others do the same.

"The only thing I could do to maintain my integrity"

Ruben Gonzales was a very good professional racquetball player. In a tournament in 1985, Ruben was playing for the title of World Champion. It was a hard fought match. At match point, Ruben made a killer shot. The referee called it good. A linesman also said that it was a fair play. Ruben had won the match.

Ruben hesitated. He turned to his opponent and the referee declaring that his shot had skipped the floor. Ruben's opponent ended up winning the match.

"It was the only thing I could do to maintain my integrity," said Ruben after the match.

Answer key:

- Honesty and fair play: Ruben was honest in telling the referee that his shot had skipped the floor and therefore was not legal.
- Dedication to the sport: Ruben put the rules and integrity of the sport above his title as World Champion.
- Respect for others and the rules: Ruben respected his opponent and the rules of the game enough to admit that the shot was not legal and give up the title.
- Courage: It was courageous for Ruben to give up the title.
- Character: Ruben is an excellent role model demonstrating that playing within the rules of the sport is more important than winning.

"If you win but don't help somebody when you should have, what win is that?" 2006 Winter Olympic Games (Turin, Italy)

Sara Renner was leading the pack during the women's team sprint cross-country skiing event at the 2006 Winter Olympic Games in Turin, Italy. Suddenly, her left ski pole broke. Three other skiers passed her within seconds, and it looked as if her race was over.

Bjoernar Haakensmoen, a cross-country ski coach from Norway, stepped forward and handed Sara a ski pole. Sara could continue the race. In fact, it worked so well that Sara's team (Canada) won a silver medal.

Bjoernar did not regret his decision to give Sara the pole. Bjoernar saw an athlete in trouble, he had the means to help, and so he did.

"The Olympic spirit is the way we try to follow," Bjoernar said. "Without that, we are in big trouble. Every skier, every staff member from Norway follows that. If you win but don't help somebody when you should have, what win is that?"

Answer key:

- Courage: by giving Sara the ski pole, Bjoernar potentially risked his career and being ostracized or not accepted by his country/athletes.
- Character: Bjoernar is an excellent role model. He showed that helping an athlete in need and keeping the sport equal, even if it means that his athlete/team did not win, are the most important outcomes.
- Respect for others: Bjoernar helped an opponent when she needed it most.
- Dedication to sport: Bjoernar's actions showed that ensuring that his sport is played the way it should was more important that wining or losing.

Debrief: In all the stories, someone risked it all to help an opponent and maintain the integrity of his/her sport. In all cases, the athlete/coach gave up something to help another. Luz lost his gold medal and his record, Lawrence lost the silver medal, Ruben lost the World Championship title and Bjoernar's team just missed the podium. The students may think that the risk is not worth it, but all of these athletes believed that living and competing within the Spirit of Sport was more important and were recognized for it. It is just a coincidence that, in all of these cases, an athlete had to give up something or lose a race to exemplify the Spirit of Sport. This is, of course, not always the case. An athlete can be a winner and still embody these important values.

For more information: For a description of the sports or disciplines mentioned in the stories above please visit the following Web sites -

International Olympic Committee - http://www.olympic.org/uk/sports/index_uk.asp

International Association of Athletics Federations - http://www.iaaf.org/theSport/whatisathletics/index.html

International Racquetball Federation - http://www.internationalracquetball.com/

International Ski Federation - http://www.fis-ski.com/

Lesson 3: Everyday Application of Spirit of Sport Values

Purpose: The purpose of this lesson is to make the connection between the Spirit of Sport values learned in Lesson 1 and students' everyday lives. Furthermore, this lesson will help students think about why it is important to embody the Spirit of Sport values.

Materials included:
- *Spirit of Sport in Everyday Life* Worksheet (completed table and blank table)

Learning objectives:
- Make connections between the Spirit of Sport values to other areas of life
- Think critically about the role the Spirit of Sport values play in sport and in other areas of life

The Spirit of Sport – Why Should We Care?

Background: In Lesson 1, students were presented with the 11 Values (see below) that characterize the Spirit of Sport. Students may believe that, because they are not interested or participate in sport or may never become an elite athlete, that the Spirit of Sport really has no bearing on them. It is important for students to recognize that these values go beyond sport. In this package, we use sport simply as the theme for highlighting these values, however they also apply to our daily lives.

Spirit of Sport Values –
- Ethics, fair play and honesty
- Health
- Excellence in performance
- Character and education
- Fun and joy
- Teamwork
- Dedication and commitment
- Respect for rules and laws
- Respect for self and other participants
- Courage
- Community and solidarity

– **Activity:** What role do the 11 Spirit of Sport Values play in your life? Why are they important? Explain to students that, so far, you have looked at the values from a sport perspective, however these values play a role in their everyday lives as well. But how?

– In Lesson 1, students completed a table with examples of good and bad behaviors associated with each of the 11 Spirit of Sport Values. Ask students to now complete the table with examples of what they do in their daily lives that exemplify these values. In the second column, ask students to explain how they expect others to show these values. Finally, in the last column, ask students to consider what would happen if they or others do not follow the values.

Note: As in Lesson 1, students can complete the blank table (individually or in small groups), or you could provide them with the completed table below and simply discuss/explain the contents (in a plenary session or in small groups).

Spirit of Sport Values	What can I do?	What do I expect of others?	What are the consequences of not having these values?
Ethics, fair play and honesty	I do not cheat on tests. I keep promises that I make to my friends and family.	I expect others not to cheat. I expect others to keep promises made to me.	If everyone cheated on a test no one would know how much they had actually learned.
Health	I take care of my body. I get enough rest.	I expect others to take care of themselves.	If everyone was tired and sick all the time, nothing would get done.
Excellence in performance	I try my best at school. Even when I do well, I try hard to do even better.	I expect my classmates to do their best. When I am playing a game with my friends or when I am working on school homework with a school friend, I expect them to try hard.	If no one does their best, work is harder and games are not as much fun. If no one tries their best, the results are not as good and there is not as much to be proud of.
Character and education	I like to learn new things. I listen to others so that I can learn more. I try to help a classmate who is having trouble understanding school work.	I expect that my friends and classmates will treat me fairly and will help me if I need it, in the same way as I would help them if they needed it.	If you are not curious about learning new things and if you are not willing to share what you know with others, each day will not be as fun and as interesting as it otherwise could be.
Fun and joy	I like to have to fun. Life is more fun when I am happy. I try to look at the positive side of a bad situation. I try to cheer my friends up when they are sad.	I expect my friends to be happy. I expect my friends to be positive.	If there was no happiness or fun, everyone would be angry and sad all the time. Work is easier to do if you are in a good mood.
Teamwork	I like to help my friends when they are in need. I help people in need even if they are not my friends.	I expect my friends to help when I am in need. I expect my friends to help others.	If you do not share and work with others, daily activities and work are harder and not as enjoyable. If people are not able to work together, trying to get anything done would be chaotic, messy and confusing.

Spirit of Sport Values	What can I do?	What do I expect of others?	What are the consequences of not having these values?
Dedication and commitment	I try to finish something that I have started, even it if it is hard to do or requires a lot of time and effort.	I expect others to finish something that they have started. I expect others not to give up when something is hard to do.	If others did not finish what they have started, it would be difficult to get things done.
Respect for rules and laws	I follow the rules at school. I follow the rules at home. I follow instructions from my teachers and parents.	I expect my friends to respect the rules. I expect my classmates to respect the school rules.	If I don't respect the rules, I could get punished. If the rules are not followed, it will be unpleasant to take part in the activity.
Respect for self and others	I am polite with others. I wait for my turn to speak in class. I wait my turn when I play a game.	I expect my friends to be nice to me. I expect people to respect me.	There is a saying that 'Respect is a two-way street'. If I do not respect others, they will not respect me and, if others do not respect me, it will make it difficult for me to respect them.
Courage	I stand up for someone smaller or younger who is being picked on. I am not afraid to defend what is right and fair, even if others do not agree.	I expect people to stand up for what is right and fair. I expect my friends to help me if someone is unfairly picking on me.	If no one has the courage to stand up for what is right and fair, bullies may get away with behaviour that is harmful and makes it difficult to get work done or to enjoy group activities.
Community and solidarity	I do good things for my community. I help my teacher. I help my friends. I help out in the school. I like to help younger students. I share what I know and have with others in need.	I expect others to do good things for our community and to share what they know and have with others.	There is a saying that 'No man is an island'. If no one shared with others or helped others, each day would be much more of a struggle.

Lesson 4: Play True Pledge

Purpose: The purpose of this lesson is to have students think about the importance of the Spirit of Sport values and adopting them in their daily lives. This will be done by having students create and sign a Play True pledge.

Materials included:
- No special material is required to complete this activity.

Learning objective:
- To apply knowledge acquired about the Spirit of Sport values in creating a Play True pledge.

Writing a Play True Pledge:

Background: The World Anti-Doping Agency's (WADA) tag line or slogan is Play True. Students will be presented with this slogan throughout this package. In this lesson, students will be writing their own Play True pledge stating their commitment to the Spirit of Sport Values.

- **Pre-activity discussion:** Ask students what a pledge or oath is. Explain to students that certain professions require that their professionals take an oath or pledge, such as politicians, judges, doctors. Explain to students that a pledge is a promise.

- Explain to students that, at the Olympic Games, an athlete and an official (referee or judge) from the host country takes a pledge on behalf of all athletes and all officials. This is called the Olympic Oath. The athlete and official hold a corner of the Olympic Flag when he/she recites the pledge.

- **Activity:** Explain to students that it is now their turn to write a pledge. Explain that their pledges will be a promise to do their best to live up to the Spirit of Sport values.

  Note: This activity can be done individually or in small groups (pairs).

- Ask students to choose 5-7 of the Spirit of Sport Values that they think are the most important in the way they live their lives/play with others. It is important that their pledges include action words explaining what they will do to demonstrate these values.

A Pledge to Play True

I _____ pledge to always Play True. I will Play True by –

Respecting the rules
I will respect the rules of the game, sport and my class.

Making sure the game is fun
I will not do anything that will take away the fun from the game.

Having the courage to speak out
I will speak out when I see someone doing something that is against the spirit of Playing True.

Doing my best
I will be happy with my performance even when it is not perfect as long as I am trying my best.

Showing good teamwork
I will cooperate and support my teammates.

Being dedicated
I will not give up when things get difficult.

This is my pledge. These are my goals. I am committed to living by this pledge.

Debrief: Once students have drafted their Play True pledge, have them recite them, as athletes and officials do during the Opening Ceremonies of the Olympic Games. Display your students' pledges in the classroom or outside of the class for the rest of the school to see, encouraging other students to also embrace the Spirit of Sport values and Play True!

Note: WADA would appreciate seeing/reading what your students have to say. Please feel free to send WADA your students' pledges by e-mail (info@wada-ama.org), by fax (+1 514 904 4451) or by post:

World Anti-Doping Agency
Attention: Education Department
Tour de la Bourse
800 Place Victoria (Suite 1700)
PO Box 120
Montreal, QC
H4Z 1B7

For more information: For examples of oaths and pledges, please visit the following links.

– Olympic Oath: (general information, as well as the text of the oath)

- International Olympic Committee - http://www.olympic.org/uk/utilities/faq_detail_uk.asp?rdo_cat=10_39_0
- Wikipedia - http://en.wikipedia.org/wiki/Olympic_Oath

– Other Pledges/Oaths:

- Hippocratic Oath (oath sworn by doctors) - http://en.wikipedia.org/wiki/Hippocratic_Oath
- Oath of Allegiance (general) - http://en.wikipedia.org/wiki/Oath_of_allegiance
- Pledge of Allegiance (USA) – http://www4.law.cornell.edu/uscode/html/uscode04/usc_sec_04_00000004----000-.html

Extension Activity

Purpose: The purpose of this section is to suggest areas where the messages included in this unit can be brought outside of the classroom.

Materials included:
- No special material is required to complete this activity.

Learning objective:
- To make connections between the Spirit of Sport values to other areas of life
- To put into practice what was learned in this unit

Background: As explored in Lesson 3, the Spirit of Sport Values extend beyond sport and are relevant to various aspects of our daily lives. This section suggests ways of extending the Spirit of Sport theme outside of the classroom.

Classroom Themes

– Rather than only exploring all 11 Spirit of Sport Values at once, each value or group of values could be used as a theme for the classroom for a given period of time (a week, month or term).

– The value or group of values could be displayed in the classroom. Learning activities, such as reading, spelling and/or composition, could revolve around this value.

– The value or group of values could serve as the focus for classroom rewards/punishments for the set period of time. For example, during “respect month” students could be rewarded for demonstrating behaviours that exemplify this value.

School-Wide Themes

– As with the Classroom Themes, each Spirit of Sport Value or group of values could be used as a school-wide theme for a given period of time (a week, month or term).

– The value or group of values could be displayed through-out the school. Learning activities, such as reading, spelling and/or composition, and assemblies could revolve around this value.

– The value or group of values could serve as the focus for school rewards/punishments for the set period of time. For example, during “respect month” students could be rewarded for demonstrating behaviours that exemplify this value.

Pledging to Play True

– In Lesson 4, students were encouraged to write and take a Play True Pledge. This activity to could be extended so that students become accountable for their behaviors and attitudes based on what they pledged.

– The pledges could serve as the focus for rewards/punishments. For example, attitudes or behaviors that exemplify what students have pledged, either in the classroom or in school in general (school yard, lunch room, hallways), are highlighted.

Spirit of Sport Values

What does the Spirit of Sport mean?

In the table below, give examples of good Spirit of Sport behaviours and acts that would be contrary, or the opposite of the Spirit of Sport.

Spirit of Sport Values	Good Spirit of Sport Behaviours	Acts Contrary to the Spirit of Sport
Ethics, fair play and honesty		
Health		
Excellence in performance		
Character and education		
Fun and joy		
Teamwork		

Spirit of Sport Values	Good Spirit of Sport Behaviours	Acts Contrary to the Spirit of Sport
Dedication and commitment		
Respect for rules and laws		
Respect for self and other participants		
Courage		
Community and solidarity		

Spirit of Sport Values

What does the Spirit of Sport mean?

Included in the table below are examples of good Spirit of Sport behaviours and acts that would be contrary, or the opposite of the Spirit of Sport.

Spirit of Sport Values	Good Spirit of Sport Behaviours	Acts Contrary to the Spirit of Sport
Ethics, fair play and honesty	I play within the rules even though I know that I will not get caught if I cheat.	I do not respect the rules of the game. I lie when I am caught cheating.
Health	I listen to my body. I eat well, get enough sleep and I do not over do it.	I take risks when I do sport. I play even when I am hurt or am tired.
Excellence in performance	I always try my best. I am happy when I win, but do not make my opponent(s) feel badly.	I give up when I am losing or not playing well. If I am not playing well, I become aggressive towards my team mates and opponents.
Character and education	I show a good example to my team mates about playing fair. I am a good role model for younger players. I always stay in control even when I am losing or not playing well.	I encourage others to cheat with me or not to play fair.
Fun and joy	Playing my favourite sport makes me happy. I always have fun, whether I am winning or losing.	I often get aggressive when I am playing, which makes sport less fun. I get angry and sad. I sometimes hurt others (physically or emotionally). I play to win. I don't find playing fun any more.

Spirit of Sport Values	Good Spirit of Sport Behaviours	Acts Contrary to the Spirit of Sport
Teamwork	I know that I cannot win alone. We win as a team and we lose as a team.	I do things on the field that make me look good but isn't really good for the team. I get mad at team mates because they aren't as good as me.
Dedication and commitment	I am dedicated to my sport and team. I go to all practices and games. I help younger kids play.	I only play in games. I do not practice or train. I don't play unless I think we are going to win.
Respect for rules and laws	I know the rules. I respect the rules and the officials.	I yell at officials and coaches. I challenge calls made by referees. I do not respect authority.
Respect for self and other participants	I don't let others treat me badly. I help my team mates and opponents up if they fall.	I yell at my team mates and opponents. I am rude. I am aggressive.
Courage	I speak out when I know that my team mate or opponent is not playing by the rules.	I do not say anything when I see a team mate or opponent breaking the rules or cheating.
Community and solidarity	I leave the competition on the field. I am friends with my opponents off the field. I speak out when I see something that isn't right.	I discriminate against other players who are different from me. I do not play with people who are not as skilled as me. I do not talk to opponents off the field.

Putting the Spirit of Sport into Action

The Spirit of Sport is important to athletes. Please read the stories of 4 athletes. Write which Spirit of Sport Values are demonstrated in each story.

Remember, the Spirit of Sport Values are –

- Ethics, fair play and honesty
- Health
- Excellence in performance
- Character and education
- Fun and joy
- Teamwork
- Dedication and commitment
- Respect for rules and laws
- Respect for self and other participants
- Courage
- Community and solidarity

Trading a silver medal to save a life

1988 Summer Olympics

Lawrence Lemieux was an Olympic sailor from Canada. During the 1988 Olympics, Lawrence was on his way to winning a silver medal, when he noticed that one of his competitors had fallen out of his boat. A sailor from Singapore was injured and having trouble keeping his head above water. Lawrence abandoned the race to save his competitor.

Lawrence did not win a silver medal in that race. He finished 22nd. During the closing ceremonies, Lawrence was given the Pierre de Coubertin Medal for Sportsmanship.

Can you identify what Spirit of Sport Values are related to Lawrence's story?

Putting the Spirit of Sport into Action

Jumping in to help a competitor in need

1936 Olympics

Jesse Owens was a very successful track and field star from the United States. Jesse's main competitor at the 1936 Olympics in Germany was Luz Long. Luz was a German athlete and was favoured to win a gold medal in the long jump.

Jesse fouled in his first two jumps. If he crossed the jumping line again he would be disqualified. Jesse was really discouraged. This was a lot of pressure on him.

Luz went over to Jesse. He introduced himself. Luz suggested that Jesse try jumping from a spot several centimetres from the line. Since Jesse almost always jumped further than the minimum required distance, he would be sure to qualify for the next round.

It worked! Jesse did not foul on his third jump. Jesse ended up winning the gold medal. Jesse even beat Luz's record.

Luz was the first person to congratulate Jesse on his victory. The two men walked off the track arm-in-arm.

Can you identify what Spirit of Sport Values are related to Jesse's story?

Putting the Spirit of Sport into Action

"The only thing I could do to maintain my integrity"

Ruben Gonzales was a very good professional racquetball player. In a tournament in 1985, Ruben was playing for the title of World Champion. It was a hard fought match. At match point, Reuben made a killer shot. The referee called it good. A linesman also said that it was a fair play. Ruben had won the match.

Ruben hesitated. He turned to his opponent and the referee declaring that his shot had skipped the floor. Ruben's opponent ended up winning the match.

"It was the only thing I could do to maintain my integrity," said Ruben after the match.

Can you identify what Spirit of Sport Values are related to Ruben's story?

Putting the Spirit of Sport into Action

"If you win but don't help somebody when you should have, what win is that?"
2006 Winter Olympic Games (Turin, Italy)

Sara Renner was leading the pack during the women's team sprint cross-country skiing event at the 2006 Winter Olympic Games in Turin, Italy. Suddenly, her left ski pole broke. Three other skiers passed her within seconds, and it looked as if her race was over.

Bjoernar Haakensmoen, a cross-country ski coach from Norway, stepped forward and handed Sara a ski pole. Sara could continue the race. In fact, it worked so well that Sara's team (Canada) won a silver medal.

Bjoernar did not regret his decision to give Sara the pole. Bjoernar saw an athlete in trouble, he had the means to help, and so he did.

"The Olympic spirit is the way we try to follow," Bjoernar said. "Without that, we are in big trouble. Every skier, every staff member from Norway follows that. If you win but don't help somebody when you should have, what win is that?"

Can you identify what Spirit of Sport Values are related to Bjoernar's story?

Spirit of Sport in Everyday Life

What does the Spirit of Sport have to do with everyday life?

Complete the table below by first giving examples of how you demonstrate the Spirit of Sport Values in your everyday life (not sport related). Next, give examples of how you expect others to demonstrate the Spirit of Sport Values. Finally, there are consequences to people not following the Spirit of Sport. Provide an example for each value.

Spirit of Sport Values	What can I do?	What do I expect of others?	What are the consequences of not having these values?
Ethics, fair play and honesty			
Health			
Excellence in performance			
Character and education			
Fun and joy			

Spirit of Sport Values	What can I do?	What do I expect of others?	What are the consequences of not having these values?
Teamwork			
Dedication and commitment			
Respect for rules and laws			
Respect for self and others			
Courage			
Community and solidarity			

Spirit of Sport in Everyday Life

What does the Spirit of Sport have to do with everyday life?

In the first column of the table below you will find examples of how you can demonstrate the Spirit of Sport Values in your everyday life (not sport related). In the next column, you are given examples of what others can do to demonstrate the Spirit of Sport Values. Finally, there are examples of consequences of not following the Spirit of Sport Values.

Spirit of Sport Values	What can I do?	What do I expect of others?	What are the consequences of not having these values?
Ethics, fair play and honesty	I do not cheat on tests. I keep promises that I make to my friends and family.	I expect others not to cheat. I expect others to keep promises made to me.	If everyone cheated on a test no one would know how much they had actually learned.
Health	I take care of my body. I get enough rest.	I expect others to take care of themselves.	If everyone was tired and sick all the time, nothing would get done.
Excellence in performance	I try my best at school. Even when I do well, I try hard to do even better.	I expect my classmates to do their best. When I am playing a game with my friends or when I am working on school homework with a school friend, I expect them to try hard.	If no one does their best, work is harder and games are not as much fun. If no one tries their best, the results are not as good and there is not as much to be proud of.

Spirit of Sport Values	What can I do?	What do I expect of others?	What are the consequences of not having these values?
Character and education	I like to learn new things. I listen to others so that I can learn more. I try to help a classmate who is having trouble understanding school work.	I expect that my friends and classmates will treat me fairly and will help me if I need it, in the same way as I would help them if they needed it.	If you are not curious about learning new things and if you are not willing to share what you know with others, each day will not be as fun and as interesting as it otherwise could be.
Fun and joy	I like to have to fun. Life is more fun when I am happy. I try to look at the positive side of a bad situation. I try to cheer my friends up when they are sad.	I expect my friends to be happy. I expect my friends to be positive.	If there was no happiness or fun, everyone would be angry and sad all the time. Work is easier to do if you are in a good mood.
Teamwork	I like to help my friends when they are in need. I help people in need even if they are not my friends.	I expect my friends to help when I am in need. I expect my friends to help others.	If you do not share and work with others, daily activities and work are harder and not as enjoyable. If people are not able to work together, trying to get anything done would be chaotic, messy and confusing.

Spirit of Sport Values	What can I do?	What do I expect of others?	What are the consequences of not having these values?
Dedication and commitment	I try to finish something that I have started, even it if it is hard to do or requires a lot of time and effort.	I expect others to finish something that they have started. I expect others not to give up when something is hard to do.	If others did not finish what they have started, it would be difficult to get things done.
Respect for rules and laws	I follow the rules at school. I follow the rules at home. I follow instructions from my teachers and parents.	I expect my friends to respect the rules. I expect my classmates to respect the school rules.	If I don't respect the rules, I could get punished. If the rules are not followed, it will be unpleasant to take part in the activity.
Respect for self and others	I am polite with others. I wait for my turn to speak in class. I wait my turn when I play a game.	I expect my friends to be nice to me. I expect people to respect me.	There is a saying that 'Respect is a two-way street'. If I do not respect others, they will not respect me and, if others do not respect me, it will make it difficult for me to respect them.
Courage	I stand up for someone smaller or younger who is being picked on. I am not afraid to defend what is right and fair, even if others do not agree.	I expect people to stand up for what is right and fair. I expect my friends to help me if someone is unfairly picking on me.	If no one has the courage to stand up for what is right and fair, bullies may get away with behaviour that is harmful and makes it difficult to get work done or to enjoy group activities.

Spirit of Sport Values	What can I do?	What do I expect of others?	What are the consequences of not having these values?
Community and solidarity	I do good things for my community. I help my teacher. I help my friends. I help out in the school. I like to help younger students. I share what I know and have with others in need.	I expect others to do good things for our community and to share what they know and have with others.	There is a saying that 'No man is an island'. If no one shared with others or helped others, each day would be much more of a struggle.

Youth Unit 2:
Doping and the Spirit of Sport

Introduction

In this unit, students will consider how doping is contrary to the values of the Spirit of Sport. Students will be presented with a definition of doping, and the history of doping and anti-doping. Finally, students will be presented with information on important organizations involved in the fight against doping.

What topics will be covered in this unit:
- What is doping?
- A history of doping and anti-doping
- Who is fighting doping?
- What is the World Anti-Doping Agency?
- Doping and the Spirit of Sport
- Doping: Why should I care?

What activities will be presented in this unit:
- Defining doping
- History of doping and anti-doping timeline
- WADA Logo Interpretation Activity
- WADA Anti-Doping Card Game

What resources are included in this unit:
- *History of Doping and Anti-Doping* Handout
- *About WADA* teacher resource
- *About WADA* handout for students
- *WADA Logo Story* Handout (with logo and without)
- *Spirit of Sport Values* (from Unit 1)
- Playing cards handout
- Game instructions

What skills will be put into practice in this unit:
- Reading comprehension
- Critical thinking
- Collaborative learning

Lesson 1: What is Doping?

Purpose: The purpose of this lesson is to introduce students to doping. Students will be presented with a definition of doping as well as be presented with a history of doping and anti-doping. Finally, students will be introduced to the types of organizations that fight doping.

Materials included:
- *What Is Doping?* Handout
- *History of Doping and Anti-Doping* Handout

Learning objective:
- To acquire knowledge about doping and anti-doping

What is Doping?

– **Discussion:** Before discussing doping, ask students to brainstorm, in small groups or individually, what they think the term means. A handout is provided to assist students in the brainstorming.
  - In the first section, "**Definition**", students should provide a definition for doping. In this case, they should not refer to a dictionary or any other resource material. Encourage students to write a definition as it might appear in the dictionary.
  - In the second section, "**Examples**", students should provide examples of how an athlete can dope.
  - In the third section, "**Cases of Doping**", students should include specific cases that they can think of, or name athletes who have been caught doping.

– Have students report what they included on their sheets.

- Athletics: Ben Johnson (1988, Canada); Dwain Chambers (2003, UK); Justin Gatlin (2006, US)
- Cycling: Floyd Landis (2006, USA); Tammy Thomas (2000 & 2001, USA)
- Skiing: Olga Danilova (2002, Russia)
- Swimming: 11 Chinese swimmers tested positive at the 1994 Asian Games
- Weightlifting: 11 Greek weightlifters and 11 Bulgarian weightlifters tested positive leading up to the 2008 Beijing Olympics
- Soccer/football: René Higuita (2004, Colombia); Fernando Couto (2001, Portugal)

Note: You may wish to include local doping cases as well. You can find examples on Wikipedia (see link below). Although this list is not official or exhaustive, it is a good resource to find examples of athletes who have tested positive from your region or from a sport that is popular with your students.
http://en.wikipedia.org/wiki/List_of_athletes_found_guilty_of_using_banned_drugs

– Once students have had time to discuss their definitions of doping, provide them with the definition WADA uses. Have students compare their definition to WADA's definition.

Doping means that an athlete used a banned (prohibited) drug to improve his/her performance.

Note: There are other events/methods that are included in WADA's definition of doping. These will be explained later in this unit as well as in other units.

What is Anti-Doping?

- **Discussion:** Introduce the concept of anti-doping by asking students to explain what they think anti-doping refers to. Some points that should come up in the course of this discussion are:
  - Fighting doping/the use of drugs to improve performance
  - Testing athletes
  - Sanctioning or banning athletes who take drugs
  - Banning drugs
  - Educating/informing athletes about what not to take

History of Doping and Anti-Doping

- It is believed that doping has been part of sport since the time of the Ancient Greeks.
- **Activity:** Have students read the *History of Doping and Anti-Doping* handout and complete a timeline plotting the important events in doping and anti-doping history.
  - Have students decide on the intervals for the events.
  - You may want to ask students to prepare two timelines – one plotting the important "doping" events and one plotting the important "anti-doping" events.

Debrief:

How do you feel when you hear that an athlete has tested positive for using a banned substance? How do you feel when you are playing a game or sport and your opponent is cheating? Ask student to put their feelings to paper by writing a text or drawing a picture illustrating the impact cheating has on them specifically or sport in general.

Note: WADA would appreciate seeing/reading what your students have to say. Please feel free to send WADA your students' work by e-mail (info@wada-ama.org), by fax (+1 514 904 4451) or by post:

World Anti-Doping Agency
Attention: Education Department
Tour de la Bourse
800 Place Victoria (Suite 1700)
PO Box 120
Montreal, QC
H4Z 1B7

Other Resources:

- World Anti-Doping Agency Web site – http://www.wada-ama.org
- UNESCO's Anti-Doping Education Brochure for Youth - http://unesdoc.unesco.org/images/0014/001465/146586e.pdf
- Wikipedia list of athletes who have tested positive for banned substances - http://en.wikipedia.org/wiki/List_of_athletes_found_guilty_of_using_banned_drugs

Lesson 2: What is the World Anti-Doping Agency?

Purpose: The purpose of this lesson is to introduce students to the fight against doping. Students will be introduced to the types of organizations that fight doping. In particular, students will be introduced to the World Anti-Doping Agency.

Materials included:
- *What Is WADA?* Handout

Learning objective:
- To acquire knowledge about the fight against doping

Who Fights Doping and What is the World Anti-Doping Agency?

Background: Athletes are tested by many organizations. Athletes competing at an international level could be tested by their National Anti-Doping Organization (NADO), by the International Federation (IF) that governs their sport, and in-competition by the competition or games organizers (such as at the Olympic Games, Paralympic Games, Commonwealth Games, Pan-American Games, Asian Games, etc.). Testing is but a small part of the anti-doping equation. Governments have a role to play as well, and this role is currently being overseen by an international organization, the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Note: The WADA Web site (http://www.wada-ama.org) contains a lot of information and resources that you may find useful.

– **Discussion:** Ask students if they can think of organizations that fight doping in sport. Examples include -
  - The World Anti-Doping Agency
  - National Anti-Doping Organizations
  - Sports federations (e.g. FIFA (football), FIBA (basketball), UCI (cycling), IAAF (track and field))
  - Major games organizers (e.g. International Olympic Committee (Olympic Games), International Paralympic Committee (Paralympics))

– Briefly explain to students what the World Anti-Doping Agency represents -
  - The fight against doping
  - Ensuring that anti-doping rules are the same in all countries and all sports
  - Educating athletes, coaches and teachers about the harms of doping

The WADA Play True Logo Story

Background: McDonald's "golden arches", Nike's *Just Do It* slogan and "swoosh" symbol. These companies' logos and slogans are recognized around the world. In this section of the unit, students will be presented with the meaning behind the WADA logo and slogan.

– **Pre-Activity:** Explain to students that companies and organizations usually have a logo, or picture that is used to identify the organization and symbolize what the organization represents.
– Ask students if they can think of any logos that are easily associated with a company. Some examples could include, McDonald's (arches), Nike (swoosh).

- Explain to students that they will be introduced to the World Anti-Doping Agency's logo. Ask students what they think would be included on a logo for an organization that fights doping.

Background: You will notice that two *WADA Logo Story* handouts are included; one contains the WADA logo, while the second does not. There are different ways to complete the following activity. You may wish to simply describe the WADA logo to your students before showing them the logo, so they can then discuss their interpretation of the logo before them and propose an alternative logo. A handout is included that does not have the WADA logo on it should you decide to have students read the description, draw their own interpretation of the logo based on the description provided and then compare their interpretation to the actual WADA logo.

WADA Logo Activity: Option 1

- Distribute the WADA Logo Story handout (without the logo) to students.
- Ask students to read the description of the WADA logo.
- Once students have had time to read the text, ask them to draw the logo, as they imagine it, based solely on the description.

WADA Logo Activity: Option 2

- Distribute the WADA Logo handout (with the logo) to students.
- Ask students to read the description of the WADA logo.
- Once students have read the text, ask them to draw their own logo that they think would best represent WADA.

Note: WADA would appreciate seeing what your students have come up with. Please feel free to send WADA your students' work by e-mail (info@wada-ama.org), by fax (+1 514 904 4451) or by post:

World Anti-Doping Agency
Attention: Education Department
Tour de la Bourse
800 Place Victoria (Suite 1700)
PO Box 120
Montreal, QC
H4Z 1B7

Lesson 3: Doping and the Spirit of Sport

Purpose: The purpose of this lesson is to make the connection between the Spirit of Sport Values and doping. Students will be encouraged to think about why doping is wrong.

Materials included:
- Playing cards
- *Game Instruction Sheet* Handout

Learning objective:
- To connect Spirit of Sport Values to other areas of life, specifically doping
- To think critically about the impact of cheating and breaking the rules on society

Cheating – What is the Big Deal?

Background: Reference is made to the lessons in Unit 1. Should you not have covered this material with your students, an overview of the concepts is provided.

- **Pre-Activity:** Review what was learned during the first lesson by asking students what the Spirit of Sport means.
- Review the 11 Spirit of Sport Values (listed below) with students. For more detail on the Spirit of Sport Values, refer to the *Spirit of Sport Values* handout (Unit 1 Lesson 1).

Ethics, fair play and honesty	Dedication and commitment
Health	Respect for rules and laws
Excellence in performance	Respect for self and other participants
Character and education	Courage
Fun and joy	Community and solidarity
Teamwork	

- Ask students to talk about what they can do when they play a game or sport, or even what they can do in their daily lives, to live up to the Spirit of Sport Values.
- Ask students how they feel when people they are playing with cheat or don't follow the rules.
- Ask students to remind you what the word "doping" means –

Doping means that an athlete used a banned (prohibited) drug to improve his/her performance.

- Ask students what they think about doping – is it fair? Does doping follow the Spirit of Sport Values?
- Explain to students that doping is cheating and is the opposite of the Spirit of Sport. Explain to students that doping also involves 'cheating' a drug test by trying to avoid taking the test or doing something to interfere with the test (putting something in the sample, using someone else's urine, etc.).

WADA's Anti-Doping Card Game

- **Activity:** Explain to students that they will play a card game in small groups (4-5 players).
- Before students break into groups and you explain the rules of the game, show students the logo at the back of the cards. Ask students to identify the logo and explain to you what it means.
- Explain the rules of the game.

Note: Please see the *WADA Anti-Doping Card Game* instruction sheet included.

- Once students are familiar with the rules of the game, arrange that there is a "cheater" in each group. The cheater will be instructed to –
  - Play out of turn
  - Not to follow the rules
- If the cheater receives the life-time ban card, he/she should no longer play the game but can continue to disrupt the game.

Debriefing:

After the game is played:

- Ask students how the game went (i.e. Was it fun?).
- Ask students if they noticed the text on the cards. If they did not notice that the text sets out Spirit of Sport Values, draw their attention to it.

Card number	Text	Spirit of Sport Values
1	Respect	Respect for rules; respect for self and others
2	Fair Play	Ethics & honesty
3	Fun	Fun & joy
4	No to Drugs	Ethics, fair play & honesty; health; respect for rules & laws; respect for self
5	Rest	Health
6	Positive Living	Health
7	Dedication	Dedication & commitment
8	Healthy Living	Health
9	Honesty	Ethics & fair play
+2	Cheated	Respect for rules and laws; Ethics, fair play & honesty
Miss a turn	Blamed Your Team Mates	Respect for other participants; fun and joy
Change direction	Didn't Play True	All 11 Spirit of Sport Values

- Encourage the students to share their feelings about being cheated and what they learned from playing the game. Encourage the students who were the "cheaters" to share their feelings about being the cheaters.
- Explain that when an athlete uses performance enhancing substances or methods, he/she is behaving in sport like the "cheaters" in the card game they just played. The sport is no longer fun for the person cheating (everyone is angry) and it is definitely not fun for the people trying to play by the rules.
- Explain to the students that they have an important rule to play in ensuring that sport is played fairly.

What is Doping?

You may have heard the term doping. What exactly does it mean? Can you define doping? Can you think of any examples of how people dope? Can you think of any examples of doping cases?

Definition:

Examples:

Doping cases:

History of Doping and Anti-Doping

Doping has been a part of sport since the beginning. Even the Ancient Greek athletes used special diets and potions to give them a boost. By the 1920s it was obvious that the use of drugs in sport had to be controlled.

In 1928, track and field was the first sport to ban the use of substances. The problem should have improved but instead it got worse. Substances were banned but there was no way of knowing if athletes were taking them.

In 1960, a cyclist died during the Olympic Games. This event put pressure on organizations to start drug testing. In 1966, cycling and football were the first sport federations to start drug testing at their World Championships.

The following year, the International Olympic Committee began planning for drug testing at the Olympic Games. Drug testing was first introduced at the Olympic Winter Games in Grenoble and at the Olympic Games in Mexico in 1968.

In the 1970s, steroids were commonly used by athletes. Steroids were banned by the International Olympic Committee in 1976.

In 1988, Ben Johnson, a sprinter from Canada, tested positive at the Olympic Games. Ben's gold medal was taken away. This event brought a lot of attention to doping.

History of Doping and Anti-Doping

Many athletes were disqualified for being caught taking steroids, but testing was not enough. Some countries were helping their athletes cheat by giving them drugs.

In 1963, France was the first country to have anti-doping rules. Other countries followed. The problem was that there were different doping definitions, policies, and sanctions. Countries were not following the same set of rules.

The World Anti-Doping Agency was created in 1999. The World Anti-Doping Agency makes sure that all countries and all sports are using the same set of rules. This set of rules is now called the World Anti-Doping Code. Countries and sports must agree to the rules of the World Anti-Doping Code to be part of the Olympic Games.

Doping...

You may have heard this word used in sporting circles and in the media. While some of what you know about doping might be true, it is important to know the facts.

What is doping?

'Doping' refers to an athlete's use of prohibited drugs or methods to improve training and sporting results. Steroids are the drugs that often come to mind when we talk about doping, but doping also includes an athlete's use of other forbidden drugs (such as stimulants, hormones, diuretics, narcotics and marijuana), use of forbidden methods (such as blood transfusions or gene doping), and even the refusal to take a drug test or an attempt to tamper with doping controls.

As you continue to participate in sport, doping is an issue that you will increasingly face: you could be tested for drugs; some of your competitors will be cheating by using drugs; you may even be tempted to do so yourself.

Why do people cheat?

Most athletes know that doping is cheating, however, some still take the risk.

Sometimes prizes, money or fame can cause people to make bad decisions. They are told that doping might give them a boost, provide a shortcut to long years of training or help them win. And they are prepared to risk their sporting careers and their health - they are prepared to win at all cost!

Others feel pressure from coaches, parents or themselves to be the best. They see doping as a way to meet these expectations.

Some athletes use drugs to overcome an injury. Trainers or coaches might say that drugs can make you forget about the pain or may help speed up recovery, but they often do not mention the health risks and that doping is cheating.

Whatever the reason, there is no excuse for doping.

What is the big deal?

It is true that doping can help athletes to build strength and muscle, reduce tiredness or cover pain, but it has bad side effects too.

Some drugs can lead to obvious changes in appearance. or example, steroid use can cause acne, particularly on the back. In boys it can shrink testicles, cause impotence and baldness, and girls can develop a deeper voice and facial hair. There can be even more serious side effects. Doping can cause heart, liver and kidney problems and has even killed some athletes.

Doping in sport is also cheating. It destroys fair play and sporting competition. There is much more to sport than just winning and, for sport to survive as a positive, worthwhile activity, honesty, cooperation and courage are essential.

What drugs are banned?

There are many types of drugs that are banned in sport because of the damage they can do to an athlete's health and to fair play. Every year a new list of banned drugs is prepared by the World Anti-Doping Agency. These drugs fall within the following categories:

- *stimulants* may increase concentration and reduce tiredness, but they can also damage the heart;
- *steroids* can increase muscle and strength, but they harm the heart, liver and reproductive system and can cause sudden death;
- *hormones* can have a variety of useful medical purposes, but they can be harmful when you are young and still growing;
- *diuretics* may help with weight loss but they cover up the use of other banned drugs and can cause dehydration and fatigue;
- *narcotics* can relieve pain but this could lead to a lasting injury;
- *cannabinoids (hashish, marijuana)* can act as relaxants, but may also lead to a loss of coordination and concentration.

Even if you take something by accident it is still considered doping. Ultimately, *you* are responsible for everything that goes into your body.

Be sure to avoid any drugs that are not prescribed by a medical doctor who knows that you are an athlete. Some drugs or supplements from the pharmacy or supermarket can contain banned substances even if their labels state that the product is 'all natural'.

Tell your doctor that you are an athlete and that you have to be careful about the medicines you take. If you need medicine for a health problem, there are ways to ensure that the medicine you take does not impact on your ability to play sport. For example, if you need asthma medicine, your sport organization and doctor can give you a form to allow you to use this medicine and to play sport. This is called a TUE (Therapeutic Use Exemption).

Look after yourself

Play fair

To be successful in sport, you need the right attitude. Honesty, dignity, fair play, respect, teamwork, commitment and courage are essential to a memorable sporting performance. All these values can be summed up in the term 'fair play'.

Fair play has to do with the choices you make - what is right and wrong. People will notice how you play the game. You will get a reputation for being a good or a bad sport which will follow you around long after the competition is over. It can shape how people act towards you before they even get to know you. To conform with the spirit of sport and build a good reputation, always:

- show respect for yourself and for others (competitors, umpires/referees and officials);
- respect the rules of the competition and of clean sport;
- be gracious as much in victory as in defeat;
- have fun and enjoy being part of the action!

Sport has little meaning without fair play. We play sport because of the chance to show our unique talents, to share, to make friends and to have fun. Fair play makes all this possible.

Doping control

As you get older and get better at sport it is likely that you will be tested for doping. These tests are aimed at preserving the spirit of sport by catching the cheats.

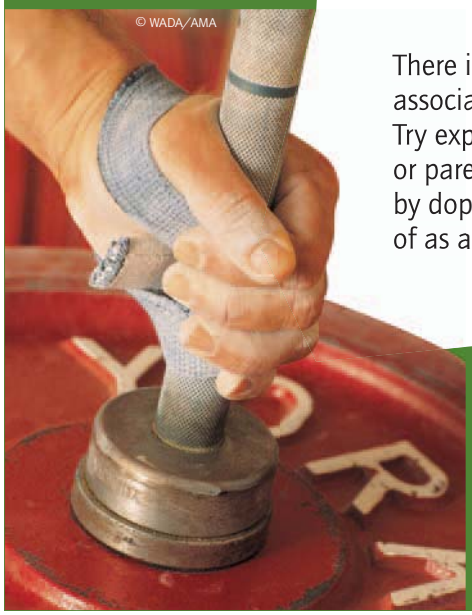
Testing can take place during a competition, during training, or in the off-season and will generally be given without forewarning. If you refuse to take a test or to follow the testing procedures, you will receive the same sanction as an athlete who tests positive.

These tests are done by a certified Doping Control Officer who collects a urine sample. In some cases, both a blood sample and urine sample is required. Samples are sent to an approved lab for analysis. Some drugs can be detected in very small amounts and months after they have been taken. Evidence of the use of some other drugs can be found as a result of the changes they cause inside the body.

Getting caught

Athletes caught cheating by doping will be banned from sport. Imagine not being able to play any sport for a two-year period or for the rest of your life. After all your training, the closest you would get to sport would be from the sidelines or the stands.

There is also a great deal of shame associated with being caught doping. Try explaining to your friends, teammates or parents that you have been cheating by doping. Nobody wants to be thought of as a drug cheat.



Key things to think about

- Sport is about expressing your true self and realizing your own unique potential.
- Being successful at sport takes the right attitude, practice, time and effort.
- Giving your natural best is always good enough.
- You will be judged on *how* you play, not just the result.
- You, and only you, are responsible for what goes into your body.

ED-2006/WS/38

Photos cover page: WADA/AMA, PML INGRAM

United Nations
Educational, Scientific and
Cultural Organization

2005
60
1945

In partnership with
WADA
play true

www.unesco.org/en/antidoping

http://www.wada-ama.org/en/

What is WADA?

Helping Athletes Play True

The World Anti-Doping Agency was created in Lausanne, Switzerland, in 1999, and is known worldwide as WADA.

WADA was created to promote, coordinate, and monitor the fight against doping in sport in all its forms. WADA works to preserve the Spirit of Sport.

About the WADA Logo and Slogan

Like most major organizations, WADA has a logo and slogan. WADA's logo and slogan represent the Spirit of Sport Values. All aspects of the logo have a meaning.

The equal sign stands for fairness in sport. The square represents the rules that must be respected in sport.

Even the colors used in the logo were chosen for a reason. Black is the color that usually represents the referee. Green is the color of the playing field for many sports. Green is also a color that represents health.

WADA's slogan is "Play True." Play True, like the Spirit of Sport, represents all the values that are good about sport. When an athlete claims to Play True, he/she is promising to play within the rules. He/she is promising to compete without doping.

WORLD ANTI-DOPING AGENCY
play true

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How to Play WADA's Anti-Doping Card Game

Object of the game: The object of the game is to be the first person to discard all his/her cards, without being banned for life for doping.

What you will need to play: All you need in order to play WADA's anti-doping card game is the special deck of cards.

How to play:

- To start the game, choose a dealer by having each player pick a card from the deck. The person with the highest number is the dealer. When selecting a dealer, the wild cards and the Life-Time Ban card count as zero.
- The dealer will give each player seven cards and put the remaining cards face down in the middle of the table. This is the draw pile.
- Turn the top card of the draw pile over to form the discard pile.
- Take turns beginning with the player to the left of the dealer and go clockwise around the table.
- When it is your turn, place a card on the discard pile. Your card must have the same number, color or wording as the top card of the discard pile – or be a wild or draw 4 card.
- If you cannot play a card, you must draw a card from the top of the deck. Play the drawn card if you can. If you cannot play the card that you drew, keep it in your hand. It's the next person's turn.
- You can play a wild card or draw 4 card any time it is your turn.
- If you are dealt or draw the Life-Time Ban card, you are instantly out of the game. The Life-Time Ban card should then be placed in the discard pile, under the card that is currently at the top of the discard pile.
- Say "Play True" when you have one card left in your hand. If you forget to say "Play True" and another player catches you, you must draw two (2) cards.

	**Regular cards** The main playing cards look like this one – in green, red, blue and yellow with numbers from 1-9.
	**Miss a Turn** When this card is played, the person playing after the one who played this card misses his/her turn. There are green, red, blue and yellow "Blamed your Teammates: Miss a turn" cards.

	**Draw 2** When this card is played, the person playing after the one who played this card must pick up two cards from the deck. There are green, red, blue and yellow "pick up 2" cards. Once the player has picked up his/her cards, his/her turn is over.
	**Didn't Play True!** This card changes the direction of play (from clockwise to counter-clockwise). There are green, red, blue and yellow change direction cards.
	**Wild Card** This card is used to change the colour or suit of play. When this card is played, the person who put the card down chooses what suit will be played.
	**Draw 4** This card is used to change the colour or suit of play. When this card is played, the person playing after the one who played this card must pick-up four cards from the deck. The person who played the card chooses what suit will be played.
	**Life-Time Ban** When a player had this card in his/her hand, he/she is automatically "banned" from the game. The player can no longer play during the game. He/she can play in subsequent games.

Tournament Play:

If you are planning on playing a series of games, players can keep track of their points. The object of Tournament Play is to be the first player to reach 500 points. At the end of each game (when a player has played all his/her cards) the **winner** gets points for cards left in **all** opponents' hands.

Card	Number of points
1-9	Face value
Draw 2	20 points
Reverse Direction	20 points
Miss a turn	20 points
Wild card	50 points
Draw 4	50 points

If a player draws a Life-Time Ban card during Tournament Play, the player is only banned for the game in which he/she is banned.

1

Training

Respect

Respect

Training

1

2

Training

Fair Play

Fair Play

Training

2

3

Training

Fun

Fun

Training

3

4

Training

No To Drugs

No To Drugs

Training

4

5

Training

Rest

Rest

Training

5

6

Training

Positive Living

Positive Living

Training

6

7

Training

Dedication

Dedication

Training

7

8

Training

Healthy Living

Healthy Living

Training

8

9

Training

Honesty

Honesty

Training

9


Training
Cheated
+2
Training


Training
Cheated
+2
Training


Training
Blamed your Teammates
Miss a turn
Training


Training
Blamed your Teammates
Miss a turn
Training


Training
Didn't Play True
Change Direction
Training


Training
Didn't Play True
Change Direction
Training


+4
Change Color


Change Color

1

Play True

Respect

Play True

1

2

Play True

Fair Play

Play True

2

3

Play True

Fun

Play True

3

4

Play True

No To Drugs

Play True

4

5

Play True

Rest

Play True

5

6

Play True

Positive Living

Play True

6

7

Play True

Dedication

Play True

7

8

Play True

Healthy Living

Play True

8

9

Play True

Honesty

Play True

9


Play True
Cheated
+2
Play True


Play True
Cheated
+2
Play True


Play True
Blamed your Teammates
Miss a turn
Play True


Play True
Blamed your Teammates
Miss a turn
Play True


Play True
Didn't Play True
Change Direction
Play True


Play True
Didn't Play True
Change Direction
Play True


+4
Change Color


Change Color

1

Lifestyle

Respect

Lifestyle

1

2

Lifestyle

Fair Play

Lifestyle

2

3

Lifestyle

Fun

Lifestyle

3

4

Lifestyle

No To Drugs

Lifestyle

4

5

Lifestyle

Rest

Lifestyle

5

6

Lifestyle

Positive Living

Lifestyle

6

7

Lifestyle

Dedication

Lifestyle

7

8

Lifestyle

Healthy Living

Lifestyle

8

9

Lifestyle

Honesty

Lifestyle

9


Lifestyle
Cheated
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Lifestyle


Lifestyle
Blamed your Teammates
Miss a turn
Lifestyle


Lifestyle
Blamed your Teammates
Miss a turn
Lifestyle


Lifestyle
Didn't Play True
Change Direction
Lifestyle


Lifestyle
Didn't Play True
Change Direction
Lifestyle


+4
Change Color


Change Color

1

Attitude

Respect

Attitude

1

2

Attitude

Fair Play

Attitude

2

3

Attitude

Fun

Attitude

3

4

Attitude

No To Drugs

Attitude

4

5

Attitude

Rest

Attitude

5

6

Attitude

Positive Living

Attitude

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Attitude

Dedication

Attitude

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Attitude

Healthy Living

Attitude

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Honesty

Attitude

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+2
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Attitude


Attitude
Didn't Play True
Change Direction
Attitude


Attitude
Didn't Play True
Change Direction
Attitude


+4
Change Color


Change Color

Teen Unit 1: What is doping?

Introduction

In this unit, students will be introduced to the concept of doping in sport. Students will consider what doping is as well as reflect on the history of doping in sport and the role this has played in the development of the anti-doping movement. Students will also be introduced to the types of organizations and documents that govern the fight against doping in sport.

What topics will be covered in this unit:
- What is doping?
- What is the history of doping in sport?
- What is the history of the fight against doping in sport?
- Who fights doping in sport?
- What are the important documents that govern the fight against doping?
- How anti-doping rules are the same in all countries and all sports to ensure that sport is fair for all athletes.

What activities will be presented in this unit:
- Defining doping
- History of doping and anti-doping timeline

What resources are included in this unit:
- *What is Doping?* Handout
- *Internationally Recognized Definition of Doping* Handout
- *History of Doping and Anti-Doping* Handout
- *Fact Sheet about The World Anti-Doping Code* Handout
- *Fact Sheet about UNESCO's International Convention against Doping in Sport* Handout
- *Who's Who in Anti-Doping* Handout

What skills will be put into practice in this unit:
- Reading comprehension
- Written expression
- Oral expression
- Collaborative learning
- Critical thinking

Lesson 1: History of Doping and Anti-Doping

Purpose: The purpose of this lesson is to introduce students to the issue of doping. Students will be presented with an internationally recognized definition of doping.

Materials included:
- *What is Doping* Worksheet
- *Internationally Recognized Definition of Doping* Handout
- History of Doping and Anti-Doping Handout

Learning objective:
- To acquire knowledge about doping and anti-doping.

What Is Doping?

– **Pre-activity:** ask students to brainstorm, in small groups or individually, what they think the term doping means. A handout is provided to assist student in the brainstorming.
  - In the first section, "**Definition**", students should provide a definition for doping. In this case, they should not refer to a dictionary or any other resource material. Encourage students to write a definition as it might appear in the dictionary.
  - In the second section, "**Examples of Substances**" students should provide examples of what an athlete can take to dope.
  - In the third section, "**Examples of Doping Cases**" students should include specific cases that they can think of, or name athletes who have been caught doping.

– Ask students to report what they included on their sheets.

Possible responses may include:

Definition:
- Taking medication, substances, drugs, medicine to make you a better athlete
- Taking a banned drug

Examples:
- Steroids
- hGH (human growth hormone)
- EPO
- Marijuana

Cases of Doping:
- Canadian sprinter: Ben Johnson (1988)
- US cyclist – Tour de France: Floyd Landis (2006)
- Major League baseball players
- East German athletes in the 1970s & 1980s
- US sprinter: Marion Jones (2008)

Note: You may wish to include local doping cases as well. You can find examples on Wikipedia (see link below). Although this list is not official or exhaustive, it is a good resource to find examples of athletes who have tested positive from your region or from a sport that is popular with your students.
http://en.wikipedia.org/wiki/List_of_athletes_found_guilty_of_using_banned_drugs

- **Debrief:** Once students have had time to discuss their definitions of doping, provide them with the definition WADA uses (*Internationally Recognized Definition of Doping*).

- Ask students compare their definition to WADA's definition. Draw students attention to the fact that doping encompasses far more than simply taking a substance for the purpose of enhancing performance.

  For more information: For more information or supporting documentation on the definition of doping and the anti-doping rule violations, please consult the World Anti-Doping Code on the World Anti-Doping Agency Web site – http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=250

History of Doping and Anti-Doping

Background: It is believed that doping has been part of sport since the time of the Ancient Greeks.

- **Activity:** Have students read the *History of Doping and Anti-Doping* handout and complete a timeline plotting the important events in doping and anti-doping history.
  - Students can decide on the intervals for the events. You may wish to have them have two timelines; one for the major events in doping history and one for the major events in anti-doping history.

- **Debrief:** Ask students to react to the history of doping and anti-doping. They may notice that for much of history the anti-doping community has had to play catch-up to the "doping" community.

- Ask students how they feel about doping now that they have been exposed to a wider definition.
  - Do they think the anti-doping rules are fair?
  - Ask them to consider the rules from the perspective of the athlete who is sanctioned and from the athletes who comply with the rules.
  - What would happen if everyone decided to ignore the rules?

  Note: You may wish to have students consider this topic in the following ways –

  Option 1: An all-class oral debriefing session as described above.

  Option 2: Break students into small groups to debate the issue. Assign students to a side – those who think that the anti-doping rule violations as outlined in the definition of doping are fair and those who do not believe they are fair.

  Option 3: Ask student to put their thoughts to paper by writing an opinion piece on the topic – Is the internationally recognized definition of doping and therefore the anti-doping rule violations outlined fair to athletes?

Note: WADA would appreciate seeing/reading what your students have to say. Please feel free to send WADA your students' written work or filmed debates by e-mail (info@wada-ama.org), by fax (+1 514 904 4451) or by post:

World Anti-Doping Agency
Attention: Education Department
Stock Exchange Tower
800 Place Victoria (Suite 1700)
PO Box 120
Montreal, QC
H4Z 1B7

Lesson 2: The Main Players in the Fight against Doping

Purpose: The purpose of this lesson is to introduce students to the fight against doping. Students will be introduced to the types of organizations that fight doping and the important documents that govern the fight. In particular, students will be introduced to the World Anti-Doping Agency and the World Anti-Doping Code.

Materials required:
- *Code Fact Sheet* Handout
- *Convention Fact Sheet* Handout
- *Who's Who in Anti-Doping* Handout

Learning objectives:
- To acquire knowledge about the fight against doping
- To acquire knowledge about the important documents that govern the fight against doping

Who Fights Doping?

Background: There are many types of organizations that fight doping. Each type of organization has a specific role to play in the fight and a specific set of guidelines that outlines this role.

– **Pre-activity:** Explain to students that in a previous lesson you looked at the definition of doping and at the history of doping and anti-doping. In this history, some organizations were named that had a role in the fight against doping. Ask students if they can remember any of the organizations that were named –
  - International Federations: International Association of Athletics Federations (IAAF), International Cycling Union (UCI), International Football Union (FIFA)
  - International Olympic Committee (IOC Medical Commission)
  - Governments (countries)
  - World Anti-Doping Agency (WADA)

– Explain to students that this is but part of the anti-doping story. Explain to students that there are three categories of organizations that fight doping, each assuming roles and having different documents that guide their roles or set-out policies that must be followed. The categories of organizations include:
  - Public authorities
  - Dedicated anti-doping organizations
  - Sport organizations

Note: A handout with the following table as well as information about the roles and responsibilities of WADA, sport and anti-doping organizations, and governments is included with this lesson, which could be provided to students.

	Public Authorities	Anti-Doping	Sport
International	United Nations Educational, Scientific and Cultural Organization (UNESCO)	The World Anti-Doping Agency (WADA)	International Olympic Committee (IOC); International Federations (IFs); other major games organizers
National	National Governments	National Anti-Doping Organizations (NADOs); Regional Anti-Doping Organizations (RADOs)	National Olympic Committees (NOCs); National Federations (NFs)

– Explain to students that there are two main documents that provide sport organizations and governments with guidance for fighting doping.
  - The **World Anti-Doping Code**: provides guidance to the sport movement
  - The **UNESCO International Convention against Doping in Sport**: provides guidance to countries

Note: Handouts outlining key information about the World Anti-Doping Code and the UNESCO International Convention against Doping in Sport are included with this lesson, which could be provided to students.

UNESCO International Convention Against Doping in Sport (Convention)	World Anti-Doping Code (Code)
Involves public authorities	Involves International Olympic Committee, International Paralympic Committee, National Anti-Doping Organizations, International Sport Federations and Major Games Organizers.
Public authorities draft policies and regulations to put the Convention into practice in their country.	In order to accept the Code, organizations have to ensure that they have anti-doping rules that are in line with the Code.

What is Doping?

You may have heard the term doping. What exactly does it mean? Can you define doping? Can you think of any examples of how people dope? Can you think of any examples of doping cases?

Definition:

Examples:

Doping cases:

Definition of Doping

Internationally Recognized Definition of Doping

We usually only think of doping as being the use of a prohibited (banned) substance, but breaking other anti-doping rules is also considered doping. In the World Anti-Doping Code (Code) doping is defined as breaking one or more anti-doping rule(s). This is also called an anti-doping rule violation.

Using a Prohibited Substance:

Athletes are responsible for everything that enters their body. This means that doping is not limited to the use of a prohibited substance with the intent to enhance performance.

Possessing a Prohibited Substance:

An athlete can be charged with an anti-doping rule violation even if he/she is found in possession of a prohibited substance or attempting to use a prohibited substance. This means that even if the athlete has not used the substance, he/she is not allowed to have possession of the prohibited substance. This anti-doping rule violation also includes trafficking and administering a prohibited substance to another athlete.

Interfering with the Testing Process:

An athlete who refuses to provide a sample after being notified that he/she has been selected for doping control, is committing an anti-doping rule violation. An athlete who agrees to provide a sample but who tampers with or attempts to tamper with the doping control equipment or any other part of the process is also considered to be committing an anti-doping rule violation.

Definition of Doping

Not Providing Whereabouts Information:

Athletes are required to inform Anti-Doping Organizations where they will be and when. An Anti-Doping Organization can test an athlete at home, at his/her training centre or at a competition. If an athlete does not provide this information or is not where he/she says he/she is three times within an 18-month period, the athlete will be charged with an anti-doping rule violation.

Encouraging or Assisting Others to Dope:

Finally, any person who assists or encourages an athlete to dope or provides an athlete with a banned substance will be charged with an anti-doping rule violation. This includes covering up any of these activities.

History of Doping and Anti-Doping

Doping has been a part of sport since the beginning. Even the Ancient Greek athletes used special diets and potions to give them a boost. By the 1920s it was obvious that the use of drugs in sport had to be controlled.

In 1928, track and field was the first sport to ban the use of substances. The problem should have improved but instead it got worse. Substances were banned but there was no way of knowing if athletes were taking them.

In 1960, a cyclist died during the Olympic Games. This event put pressure on organizations to start drug testing. In 1966, cycling and football were the first sport federations to start drug testing at their World Championships.

The following year, the International Olympic Committee (IOC) began planning for drug testing at the Olympic Games. Drug testing was first introduced at the Olympic Winter Games in Grenoble and at the Olympic Games in Mexico in 1968.

In the 1970s, steroids were commonly used by athletes. A test to detect steroids was introduced in 1974 and steroids were banned by the IOC in 1976. Many athletes were disqualified for being caught taking steroids, but testing was not enough. Some countries were helping their athletes cheat by giving them drugs.

In 1988, Ben Johnson, a sprinter from Canada, tested positive at the Olympic Games in Seoul, South Korea. Ben's gold medal was taken away. This event brought a lot of attention to doping.

History of Doping and Anti-Doping

In the 1990s, some scientists helped athletes avoid testing positive by developing new doping techniques and drugs that were not detectable.

One of these techniques is blood doping. Blood doping refers to an athlete changing the composition of his or her blood to improve his or her performance. Meanwhile, new drugs such as EPO (erythropoietin by its scientific name) or the human growth hormone (hGH) were being used by athletes. With the support of top scientists of the world, new detections methods are now used to detect these substances and prevent athletes from cheating.

It is important to know that not only scientists contribute to the fight against doping in sport, but governments are also involved. In 1963, France was the first country to have anti-doping rules. Other countries followed. The problem was that countries were not following the same set of rules.

In 1999, the World Anti-Doping Agency (WADA) was created to make sure that all countries and all sports use the same set of rules. This set of rules is now called the World Anti-Doping Code (the Code). WADA's mission is to promote, coordinate and monitor the fight against doping in sport around the world.

Who's Who in Anti-Doping

The fight against doping in sport is fought on different levels by different organizations.

Organizations representing governments and the sport movement are involved in the international and national fight against doping in sport. The table below provides an overview of the different organizations involved.

	Public Authorities	Anti-Doping	Sport
International	United Nations Educational, Scientific and Cultural Organization (UNESCO)	The World Anti-Doping Agency (WADA)	International Olympic Committee (IOC); International Federations (IFs); other major games organizers
National	National Governments	National Anti-Doping Organizations (NADOs); Regional Anti-Doping Organizations (RADOs)	National Olympic Committees (NOCs); National Federations (NFs)

Each organization has specific roles and responsibilities in ensuring that sport is free from doping. The diagram below outlines the type of activities each group of organizations is responsible for.

World Anti-Doping Agency
The international independent organization created to promote, coordinate, and monitor the fight against doping in sport.

Government

- Testing
- Regulating supplements
- Financial support
- Regulating manufacturing and trafficking
- Codes of Conduct
- Education
- Research

Sport & Anti-Doping

- Testing
- Sanctions
- Education
- Identifying trends & risks

World Anti-Doping Code

The World Anti-Doping Code, commonly referred to as “the Code,” was created to make sure that athletes in all countries and all sports are subject to the same anti-doping rules and procedures.

The Code defines what constitutes an anti-doping rule violation. Doping is not limited to taking a banned substance. It also includes:

- Possessing, using or attempting to use a banned substance
- Refusing or avoiding testing
- Trafficking
- Combination of 3 whereabouts failures (within a 12 month period)
- Tampering with the testing process
- Encouraging or assisting an athlete to dope or providing an athlete with a banned substance
- Associating with someone under a doping-related suspension

The Code outlines what sanctions must be imposed for the different types of violations and describes other circumstances that may have an effect on which sanction is imposed.

Type of Violation	Range of Sanctions
Possession or use of a prohibited substance	**Minimum** – Reprimand (with proof of contaminated products on specified substances) **Standard** – 2-4 years
Refusing to be tested	**Standard** – 4 years
Trafficking	**First violation** – 4 years to lifetime
Combination of 3 whereabouts failures (within 12 months)	**First violation** – 2 years

World Anti-Doping Code

Type of Violation	Range of Sanctions
Tampering with the testing process	**Standard** – 4 years
Encouraging or assisting an athlete to dope or providing a doping substance	**Standard** – 2-4 years
Administration	**Standard** – 4 years to a lifetime
Prohibited association	**Standard** – 2 years

Please be aware that sanctions can go up to a lifetime ban in some cases

UNESCO Convention

International Convention against Doping in Sport

United Nations Educational, Scientific and Cultural Organization

The sport movement works in collaboration with governments to protect the rights of clean athletes by fighting doping in sport. In 2004, the sport movement adopted the World Anti-Doping Code (Code), the document harmonizing anti-doping policies and regulations in all sports and all countries of the world.

Since many governments could not be legally bound by a non-governmental document like the Code, a partnership was created with the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the UNESCO International Convention against Doping in Sport was born.

The Convention allows governments to align their domestic legislation with the Code and thereby to continue to harmonize sport and public legislation in the fight against doping in sport.

The Convention, which was developed and implemented in record pace, was adopted in October 2005. In order for it to come into effect, it needed to be ratified by 30 countries. The Convention officially went into effect on February 1, 2007.

On November 12, 2008, WADA joined UNESCO to celebrate the milestone of the 100th country ratifying the Convention.

Teen Unit 2:
Why is doping banned?

Introduction

In this unit, students will consider why doping is banned in sport. The ethical and health considerations to banning doping will be presented. Students will consider how, from a moral or ethical perspective (values of sport and society) as well as the effects doping can have on an athlete's health, anti-doping is part of the fundamental rules of sport. Finally, students will consider how society treats those labelled as cheaters or dopers.

Ethical Rationale: As this unit unfolds, students will consider how their values and sources of influence play a role in the decisions they make and how this is connected to why athletes dope. Finally, students will consider why rules are important in the classroom, sport and society. They will play a card game which will show them what happens when the rules of the game are changed for one person. The game will also have them reflecting on how society treats those who cheat by taking doping substances.

Health Consequences: Students will be presented with the adverse side effects of using doping substances. Students will consider the potential danger of using medications that are intended to be used for the treatment of medical conditions by healthy athletes. Finally students will consider why certain substances are prohibited and the process of having these substances added to the List of Prohibited Substances and Methods.

What topics will be covered in this unit:
- What are the sources of influence in students' lives? How does this impact decision making?
- How personal values are connected to sport values and the impact this has on decision making.
- Why are rules important?
- Why are doping substances dangerous to the health of those who use them?
- What are the side effects of doping substances?
- Why do some athletes put themselves at risk by doping?

What activities will be presented in this unit:
- Values and Sport
- Anti-Doping Card Game
- Recognizing the Dangers of Doping

What resources are included in this unit:
- *WADA Anti-Doping Card Game* (instructions and cards)
- *Get the Facts* Handout
- *Doping Substances and their Health Consequences* PowerPoint Presentation

What skills will be put into practice in this unit:
- Critical thinking
- Reading comprehension
- Written expression
- Oral expression
- Collaborative learning

Lesson 1: Values, Sport and Anti-Doping

Purpose: The purpose of this lesson is to have students think critically about why doping is not permitted in sport from an ethical standpoint. Students will explore the role values and rules play in sport.

Materials required:
- *Card Game Instructions* Handout
- *WADA Cards* Handout

Learning objectives:
- To initiate a discussion on the importance of values, their origins and their influence in decision making and how it relates to the national context;
- To identify the values present in local society in general and in sport specifically;
- To consider the different sources of influence in an athlete's decision making process regarding doping;
- To initiate a general discussion on the role values play in an anti-doping education program.

Values and Sport

Background: Not only is doping dangerous to the health of an athlete, it is also cheating. Of course the anti-doping movement is concerned with the health of athletes; however it is also concerned with maintaining the ethics of sport. By protecting an athlete's right to participate in clean sport we are thus promoting health, fairness, and equality for athletes worldwide.

Why should we care? There are critics of the anti-doping movement who believe that sport would only be fair if we allowed all athletes to dope, believing that doping would be safe if done under the supervision of a physician. Others believe that doping goes against athlete rights.

Introduction to activity: The following activity is intended to have students think about why people are involved and continue in sport, sources of influence on their lives, and how this is connected to anti-doping.

Values and Sport Activity Part 1: Reflection on fundamental values

– Ask students to form two circles, one inside the other, with students facing each other in a way that those making up the internal circle can dialogue with those making up the external circle.

– Ask students to discuss each of the following questions (3-5 minutes per question). After each question, ask students making up the internal circle to move one place to the left so that they have a new discussion partner for each question.
  - Within your family circle, who is your hero? Why?
  - What behaviors are encouraged/discouraged by your parents/educators?
  - What methods are used for resolving conflicts within your family?

– Once all questions have been discussed, ask students to share their responses in a plenary session, in order to generalize the family values to society.

Note: You may wish to write the responses on a board to help students draw conclusions about common values.

– **Wrap-up:** Based on the responses given, ask students to draw conclusions about family values, pointing out commonalities in the responses given.

Values and Sport Activity Part 2: Reflection on values and sport

– Ask students to form groups of 3-4.

– Ask students to discuss each of the following questions within their groups (3-5 minutes per question).
  - Who is your favorite athlete or sports hero? Why?
  - Why are you interested in sport or why did you begin to play the sport you played?
  - Within the context of sport, what behaviors are encouraged/discouraged by your coach or parents?
  - Why would you continue/stop playing that sport?
  - Why would you become a coach?

– Once all questions have been discussed, ask students to share their responses in a plenary session, in order to generalize the family values to society in general and sport specifically.

Note: You may wish to write the responses on a board to help students to draw conclusions about the values inherent in sport.

– **Wrap-up:** Ask students to draw conclusions about values inherent in sport (which responses came up most frequently). Ask students to consider what this discussion has to do with anti-doping? Ask students to reflect on the following questions:
  - How will values influence the decision-making process of an athlete?
  - Are the core societal and sport values mostly the same?
  - What possible differences can you identify that would put athletes in a dilemma when facing situations related to doping?

What do values have to do with anti-doping?

– **Discussion:** Ask students why they think doping is not allowed in sport. Responses may include:

  - Puts athletes' health at risk
  - Against the rules of sport
  - It's not fair

– Explain to students that the fundamental reason for prohibiting doping in sport is to preserve what is valuable about sport. Ask students why they play/are involved in/like sport. Responses may include:

  - To be fit/good health
  - To make friends/be with friends
  - To win
  - To make money
  - To be famous
  - To get girls/guys
  - To have fun

Note: It is common for students to respond with the image of professional or elite athletes in mind. The point to highlight is the fact that we are involved in sport because of how it makes us feel, to have fun and be with friends.

If students mention:	
• to win, • to make money, • to be famous	• Ask if they always win, if not why they continue to play even when they lose. • Ask if they make money for playing on the school or local team, if not ask why they continue to play. • Ask if they are famous for playing on the school team, if not ask why they continue to play.

– Explain to students that the reason doping is fought is to preserve the values that are associated with sport. These are known as the Spirit of Sport Values and include:
  - Ethics, fair play and honesty
  - Health
  - Excellence in performance
  - Character and education
  - Fun and joy
  - Teamwork
  - Dedication and commitment
  - Respect for rules and laws
  - Respect for self and other participants
  - Courage
  - Community and solidarity

– Recalling responses that students gave during the Values and Sport activity, ask students if they see links between the values they highlighted in their discussion and the eleven Spirit of Sport Values.

– What do these values represent in sport and in daily life in general? Ask students what role they play or why these values are so important to preserve. This could be done in written format, orally in small groups or as a general class discussion. Possible answers are included in the box below.

Spirit of Sport Values	**Good Spirit of Sport Behaviours**	**Acts Contrary to the Spirit of Sport**
Ethics, fair play and honesty	I play within the rules even though I know that I will not get caught if I cheat.	I do not respect the rules of the game. I lie when I am caught cheating.
Health	I listen to my body. I eat well, get enough sleep and I do not overdo it.	I take risks when I play sport. I play even when I am hurt or am tired.
Excellence in performance	I always try my best. I am happy when I win, but do not make my opponent(s) feel badly.	I give up when I am losing or not playing well. If I am not playing well, I become aggressive towards my team mates and opponents.

Spirit of Sport Values	Good Spirit of Sport Behaviours	Acts Contrary to the Spirit of Sport
Character and education	I show a good example to my team mates about playing fair. I am a good role model for younger players. I always stay in control even when I am losing or not playing well.	I encourage others to cheat with me or not to play fair.
Fun and joy	Playing my favourite sport makes me happy. I always have fun, whether I am winning or losing.	I often get aggressive when I am playing, which makes sport less fun. I get angry and sad. I sometimes hurt others (physically or emotionally). I play to win. I don't find playing fun any more.
Teamwork	I know that I cannot win alone. We win as a team and we lose as a team.	I do things on the field that make me look good but isn't really good for the team. I get mad at team mates because they aren't as good as me.
Dedication and commitment	I am dedicated to my sport and team. I go to all practices and games. I help younger kids play.	I only play in games. I do not practice or train. I don't play unless I think we are going to win.
Respect for rules and laws	I know the rules. I respect the rules and the officials.	I yell at officials and coaches. I challenge calls made by referees. I do not respect authority.
Respect for self and other participants	I don't let others treat me badly. I help my team mates and opponents up if they fall.	I yell at my team mates and opponents. I am rude. I am aggressive.
Courage	I speak out when I know that my team mate or opponent is not playing by the rules.	I do not say anything when I see a team mate or opponent breaking the rules or cheating.
Community and solidarity	I leave the competition on the field. I am friends with my opponents off the field. I speak out when I see something that isn't right.	I discriminate against other players who are different from me. I do not play with people who are not as skilled as me. I do not talk to opponents off the field.

Why are rules so important?

– **Discussion:** Ask students why they think that sport, society and even their classroom have rules. Responses may include:

- to avoid chaos
- to ensure safety

– Ask students to explain the rules of some of their favorite sports. Responses may include:

- Not using your hands in soccer/football
- Boundaries on the field of play/court
- Not walking with the ball in basketball
- Rules about contact with opposing players
- Rules about acceptable equipment
- Number of players allowed on the field

– Ask students why they think anti-doping rules are part of sport. Explain to students that anti-doping rules are put into place to ensure that sport remains fun and safe.

– Provide students with the *Why Fight Doping Handout*, for their information. You may wish to discuss the handout with students, asking if they agree or disagree with the points included.

Anti-Doping Card Game

– **Pre-Activity:** Explain to students that they will play a card game in small groups (4-5 players).

– Before students break into groups and you explain the rules of the game, show students the logo at the back of the cards. Ask students to identify the logo and explain to you what it means.

About the WADA Logo:

The logo is in the shape of a square which represents the rules that define sport. The color black is the traditional color of the referee. Black represents neutrality.

The logo's "equal sign" represents fairness and is made with a human touch to reflect the particularities of each individual. The color green represents health, nature and the playing field.

The "play true" tag line encapsulates WADA's core values and is intended as a guiding principle for all athletes at every level of competition.

WORLD ANTI-DOPING AGENCY
play true

– **Activity**: Explain the rules of the game.

Note: Please see the *WADA Anti-Doping Card Game* instruction sheet included.

Card number	Text	Spirit of Sport Values
1	Respect	Respect for rules; respect for self and others
2	Fair Play	Ethics & honesty
3	Fun	Fun & joy
4	No to Drugs	Ethics, fair play & honesty; health; respect for rules & laws; respect for self
5	Rest	Health
6	Positive Living	Health
7	Dedication	Dedication & commitment
8	Healthy Living	Health
9	Honesty	Ethics & fair play
+2	Cheated	Respect for rules and laws; Ethics, fair play & honesty
Miss a turn	Blamed Your Team Mates	Respect for other participants; fun and joy
Change direction	Didn't Play True	All 11 Spirit of Sport Values

– Once students are familiar with the rules of the game, arrange that there is a "cheater" in each group. The cheater will be instructed to –
  - Play out of turn
  - Not to follow the rules

Note: If the cheater receives the life-time ban card, he/she should no longer play the game but can continue to disrupt the game.

Debriefing:

– Ask students how the game went (i.e. Was it fun?).

– Ask students if they noticed the text on the cards. If they did not notice that the text sets out Spirit of Sport Values, draw their attention to it.

– Encourage the students to share their feelings about being cheated and what they learned from playing the game. Encourage the students who were the "cheaters" to share their feelings about being the cheaters.

– Explain that when an athlete uses performance enhancing substances or methods, he/she is behaving in sport like the "cheaters" in the card game they just played. The sport is no longer fun for the person cheating (everyone is angry) and it is definitely not fun for the people trying to play by the rules.

Lesson 2: Health Consequences of Doping

Purpose: The purpose of this lesson is to introduce students to the health consequences associated with some of the major categories of doping substances.

Materials included:
- *Get the Facts* Handout
- *Recognizing the Dangers of Doping* Worksheet
- *Doping substances and their Health Consequences* PowerPoint Presentation

Learning objectives:
- To introduce students to a list of doping substances
- To introduce students to the dangers doping poses to the health

Why are doping substances dangerous to the health of those who use them?

Background: Not only is doping unethical, it is dangerous to the health of those who use these substances.

Most of the substances used for doping were created for people with specific medical conditions or health problems. They were not created to be used by healthy people or athletes.

While the side effects of medications are well researched and documented, athletes who dope often take the substances in higher doses than recommended and in combination with other medications.

Furthermore, many of the substances doping athletes take are developed and distributed illegally. Many of them are new drugs that have not been tested clinically while others may be contaminated, so they could cause serious health problems or even death.

Although the substances discussed in this lesson are not the only ones that are prohibited or banned, the substances selected either pose the highest risk for your students or are substances that students are interested in learning more about.

– **Discussion:** Ask students why they think there is a list of banned substances.

Note: Get the Facts handout is included so that brainstorming can be done individually or in small groups.

– Explain to students that WADA publishes the List of Prohibited Substances and Methods (the List) once a year. This is the list of substances or medications that athletes cannot take. The List explains that, for a substance to be added to the List, it must meet two of the following three criteria:
  - The substance or method has the potential for enhancing or actually does enhance sport performance.
  - The substance or method has the potential to or actually does pose a risk to the athlete's health.
  - The substance or method violates the values of the Spirit of Sport.

Note: For more information regarding the 11 Spirit of Sport Values refer to Lesson Plan on Ethics included in this package.

What are the side effects of some doping substances?

– **Discussion:** Ask students to name doping substances that they have heard about. Responses may include:

- Steroids
- EPO
- Human growth hormone (or hGH)
- Testosterone
- CERA
- "The Clear"
- Stimulants
- Narcotics (including morphine and common social/recreational drugs)
- Cannabis (marijuana)

– Ask students if they are aware of any side effects or health consequences associated with using/taking these substances.

Background: Below are some of the side effects or health consequences associated with steroids, marijuana (cannabinoids/cannabis), stimulants, EPO (Erythropoietin), and human growth hormone (hGH).

Substance	What is it?	Side effects
Steroids	Steroids are natural or man-made substances that act like the hormone testosterone. Steroids stimulate the development of male sexual characteristics and the build-up of muscle tissue. They are sometimes used medically to help recovery from an operation and to treat breast cancer.	• Psychological dependence, increased aggression and mood swings • Increased risk of liver and cardiovascular disease • High blood pressure • Acne and baldness **Also in males –** • Shrinking testicles • Sexual side effects • Breast growth **Also in females –** • Development of male features • Abnormal menstrual cycles • Enlarged clitoris
Marijuana	Is made from the dried flowers, leaves or resin of the cannabis plant. The main active chemical in cannabis is THC (for tetrahydrocannabinol) and this causes a series of reactions in the brain that lead to feelings of relaxation and reduced inhibition.	Long-term use can result in the following: • Psychological and physical dependence • Loss of attention and motivation • Impaired memory and learning abilities • Weakening of the immune system • Respiratory diseases such as lung and throat cancer and chronic bronchitis • Psychosis

Substance	What is it?	Side effects
Stimulants	Stimulants are a class of drugs that act on the central and peripheral nervous system in the same way as the hormones adrenaline, noradrenaline, and/or the neurotransmitters dopamine and serotonin, by speeding up parts of the brain and the body's reactions. Common street drugs that are stimulants include cocaine, amphetamines and ecstasy. Caffeine is a stimulant but is no longer banned.	• Psychological and physical (withdrawal) dependence, anxiety and aggression • Increased and irregular heart rate and increased blood pressure • Dehydration • Problems with coordination and balance • Insomnia • Tremors • Memory loss • Loss of appetite
EPO	Erythropoietin or **EPO** is a natural and man-made hormone that controls or stimulates the production of red blood cells. The kidney cells that make EPO are sensitive to low oxygen levels in the blood. These cells release EPO when the oxygen level is low in the kidney. EPO then stimulates the bone marrow to produce more red cells and thereby increase the oxygen-carrying capacity of the blood. EPO is used to treat anaemia resulting from chronic kidney disease and from the treatment of cancer.	• Increased blood viscosity (thickness/stickiness) • Pulmonary embolism • Increased risk of heart attack and stroke • General weakness • High blood pressure
hGH	Human Growth Hormone or **hGH** is a natural and man-made hormone that stimulates growth and cell division. It is used in the treatment of natural growth hormone deficiencies.	• Severe headaches • Loss of vision • High blood pressure and heart failure • Diabetes and tumours • Crippling arthritis • Irreversible acromegaly (enlargement of the hands and feet, and protruding forehead, brow, skull and jaw) • Heart enlargement • Water retention • Liver and thyroid damage

– Ask students, either individually or in small groups, to complete the *Recognizing the Dangers* worksheet (crossword puzzle).

Why do athletes do it?

Debrief: Knowing what they now know about the side effects of using these substances, ask students if they would take the substances. Ask them why they think athletes take the risk. What do they think makes an athlete decide to ignore the risks and use these substances? Students can simply be asked to share their thoughts with the class, be split into small discussion groups or even be asked to write a short text explaining their thoughts.

For more information:

- WADA's List of Prohibited Substances & Methods – http://www.wada-ama.org/en/prohibitedlist.ch2
- That's Dope - http://thatsdope.org/whatsdoping/classes.html
- Taylor Hooton Foundation - http://www.taylorhooton.org/
- US National Institute on Drug Abuse – http://www.nida.nih.gov/parent-teacher.html

Lesson 3: Making Decisions

Purpose: The purpose of this lesson is to have students think critically about why athletes decide to dope.

Material included:
- *Case Scenarios* Handout

Learning objective:
- To consider the difference sources of influence in an athlete's decision making process regarding doping

Background: In the two previous lessons, students considered the ethical rationale and health consequences of doping, and began thinking about why athletes take the risk when they know that it is wrong and it could be harmful. In this lesson, students will further consider the reasons by analysing cases of young athletes who have engaged in doping.

- **Discussion:** Ask students why they believe athletes who dope decide to do so or are forced to by someone around them.
- Ask students whether they believe there are consequences to doping besides those that affect their health. Ask students how the media and society treat or talk about athletes who test positive. If students have played WADA's Anti-Doping Card Game, remind students how the cheaters were treated when they were labelled as cheaters or got the banned for life card.
- Ask students if they believe that athletes who dope are aware of the social and health consequences. Ask students why they think that athletes still take the risk. Responses may include:

  - Success
  - Fame
  - Money
  - Status
  - Scholarships

- Ask students why they think athletes who do not dope take this decision. Do the clean athletes want to be successful, famous and rich less than those who dope? What is the difference between a clean athlete and a doped athlete? What can be done to ensure that young athletes continue to complete cleanly?

Note: Rather than conducting this activity as a teacher-led, plenary style session, you may wish to have students answer these questions in small groups and present their responses to the class for further discussion. It could also be a topic for an essay or composition. WADA would love to see/read what your students have to say. Please feel free to send WADA your students' work by e-mail (info@wada-ama.org), by fax (+1 514 904 4451) or by post:

World Anti-Doping Agency
Attention: Education Department
Tour de la Bourse
800 Place Victoria (Suite 1700)
PO Box 120
Montreal, QC
H4Z 1B7

- **Activity:** Explain to students that whether they realize it or not, they go through a process every time they make a decision. Whether it is a simple decision like what to have for lunch or a more "significant" decision, such as what to study in university, you go through a process.

- Explain to students that although the process is usually the same, how they come about taking the decision is different. Sometimes the decision is physical (hungry, tired, thirsty), emotional (afraid, angry, unsure), social (feeling lonely, wanting to be included, wanting to have fun), or even based on economics (you need money so you get a part-time job). The decision that is taken is always based on the type of person you are, your values, your beliefs and your knowledge.

- Explain to students that when faced with a problem to solve or decision to make, a person:
    - Defines the problem
    - Identifies the desired outcome
    - Identifies potential hurdles or obstacles
    - Identifies choices or ways of reaching the outcome and overcoming the obstacles
    - Analyzes the options
    - Chooses an option
    - Justifies the decision take
    - Identifies a contingency plan
    - Evaluates the decision made

- **Pre-Activity:** Ask students to apply this process to a decision, small or large, that they had to make.

  Note: This could be done individually (written), in small groups (orally and written) or as a teacher-led activity (orally). Ask students to consider whether the decision was motivated by physical, emotional, social or economic needs.

- Ask students how they believe this would apply to an athlete who has to make the decision to dope or not. Have students repeat the process, assuming the role of the athlete.

  Note: This could be done individually (written), in small groups (orally and written) or as a teacher-led activity (orally). Ask students to consider whether the decision was motivated by physical, emotional, social or economic needs.

- **Activity:** Provide students with the cases of real young athletes who were faced with the decision to dope or not. Unfortunately the athletes in these stories decided to follow the doping path. Ask students to consider the process that these athletes underwent. Ask students to also consider what motivated these athletes to dope.

  Note: This could be done individually (written), in small groups (orally and written) or as a teacher-led activity (orally).

- **Debrief:** In a plenary session, ask students to discuss the process and what motivated the athletes in the stories to dope. Ask students if they would have recognized the signs. Ask students at what point they think someone could have intervened.

How to Play WADA's Anti-Doping Card Game

Object of the game: The object of the game is to be the first person to discard all his/her cards, without being banned for life for doping.

What you will need to play: All you need in order to play WADA's anti-doping card game is the special deck of cards.

How to play:

- To start the game, choose a dealer by having each player pick a card from the deck. The person with the highest number is the dealer. When selecting a dealer, the wild cards and the Life-Time Ban card count as zero.
- The dealer will give each player seven cards and put the remaining cards face down in the middle of the table. This is the draw pile.
- Turn the top card of the draw pile over to form the discard pile.
- Take turns beginning with the player to the left of the dealer and go clockwise around the table.
- When it is your turn, place a card on the discard pile. Your card must have the same number, color or wording as the top card of the discard pile – or be a wild or draw 4 card.
- If you cannot play a card, you must draw a card from the top of the deck. Play the drawn card if you can. If you cannot play the card that you drew, keep it in your hand. It's the next person's turn.
- You can play a wild card or draw 4 card any time it is your turn.
- If you are dealt or draw the Life-Time Ban card, you are instantly out of the game. The Life-Time Ban card should then be placed in the discard pile, under the card that is currently at the top of the discard pile.
- Say "Play True" when you have one card left in your hand. If you forget to say "Play True" and another player catches you, you must draw two (2) cards.

	**Regular cards** The main playing cards look like this one – in green, red, blue and yellow with numbers from 1-9.
	**Miss a Turn** When this card is played, the person playing after the one who played this card misses his/her turn. There are green, red, blue and yellow "Blamed your Teammates: Miss a turn" cards.

	**Draw 2** When this card is played, the person playing after the one who played this card must pick up two cards from the deck. There are green, red, blue and yellow "pick up 2" cards. Once the player has picked up his/her cards, his/her turn is over.
	**Didn't Play True!** This card changes the direction of play (from clockwise to counter-clockwise). There are green, red, blue and yellow change direction cards.
	**Wild Card** This card is used to change the colour or suit of play. When this card is played, the person who put the card down chooses what suit will be played.
	**Draw 4** This card is used to change the colour or suit of play. When this card is played, the person playing after the one who played this card must pick-up four cards from the deck. The person who played the card chooses what suit will be played.
	**Life-Time Ban** When a player had this card in his/her hand, he/she is automatically "banned" from the game. The player can no longer play during the game. He/she can play in subsequent games.

Tournament Play:

If you are planning on playing a series of games, players can keep track of their points. The object of Tournament Play is to be the first player to reach 500 points. At the end of each game (when a player has played all his/her cards) the **winner** gets points for cards left in **all** opponents' hands.

Card	Number of points
1-9	Face value
Draw 2	20 points
Reverse Direction	20 points
Miss a turn	20 points
Wild card	50 points
Draw 4	50 points

If a player draws a Life-Time Ban card during Tournament Play, the player is only banned for the game in which he/she is banned.

1

Training

Respect

Respect

Training

1

2

Training

Fair Play

Fair Play

Training

2

3

Training

Fun

Fun

Training

3

4

Training

No To Drugs

No To Drugs

Training

4

5

Training

Rest

Rest

Training

5

6

Training

Positive Living

Positive Living

Training

6

7

Training

Dedication

Dedication

Training

7

8

Training

Healthy Living

Healthy Living

Training

8

9

Training

Honesty

Honesty

Training

9


Training
Cheated
+2
Training


Training
Cheated
+2
Training


Training
Blamed your Teammates
Miss a turn
Training


Training
Blamed your Teammates
Miss a turn
Training


Training
Didn't Play True
Change Direction
Training


Training
Didn't Play True
Change Direction
Training


+4
Change Color


Change Color

1

Play True

Respect

Play True

1

2

Play True

Fair Play

Play True

2

3

Play True

Fun

Play True

3

4

Play True

No To Drugs

Play True

4

5

Play True

Rest

Play True

5

6

Play True

Positive Living

Play True

6

7

Play True

Dedication

Play True

7

8

Play True

Healthy Living

Play True

8

9

Play True

Honesty

Play True

9


Play True
Cheated
+2
Play True


Play True
Cheated
+2
Play True


Play True
Blamed your Teammates
Miss a turn
Play True


Play True
Blamed your Teammates
Miss a turn
Play True


Play True
Didn't Play True
Change Direction
Play True


Play True
Didn't Play True
Change Direction
Play True


+4
Change Color


Change Color

1

Lifestyle

Respect

Lifestyle

1

2

Lifestyle

Fair Play

Lifestyle

2

3

Lifestyle

Fun

Lifestyle

3

4

Lifestyle

No To Drugs

Lifestyle

4

5

Lifestyle

Rest

Lifestyle

5

6

Lifestyle

Positive Living

Lifestyle

6

7

Lifestyle

Dedication

Lifestyle

7

8

Lifestyle

Healthy Living

Lifestyle

8

9

Lifestyle

Honesty

Lifestyle

9


Lifestyle
Cheated
+2
Lifestyle


Lifestyle
Cheated
+2
Lifestyle


Lifestyle
Blamed your Teammates
Miss a turn
Lifestyle


Lifestyle
Blamed your Teammates
Miss a turn
Lifestyle


Lifestyle
Didn't Play True
Change Direction
Lifestyle


Lifestyle
Didn't Play True
Change Direction
Lifestyle


+4
Change Color


Change Color

1

Attitude

Respect

Attitude

1

2

Attitude

Fair Play

Attitude

2

3

Attitude

Fun

Attitude

3

4

Attitude

No To Drugs

Attitude

4

5

Attitude

Rest

Attitude

5

6

Attitude

Positive Living

Attitude

6

7

Attitude

Dedication

Attitude

7

8

Attitude

Healthy Living

Attitude

8

9

Attitude

Honesty

Attitude

9


Attitude
Cheated
+2
Attitude


Attitude
Cheated
+2
Attitude


Attitude
Blamed your Teammates
Miss a turn
Attitude


Attitude
Blamed your Teammates
Miss a turn
Attitude


Attitude
Didn't Play True
Change Direction
Attitude


Attitude
Didn't Play True
Change Direction
Attitude


+4
Change Color


Change Color

Get the Facts…

Doping is not only unethical - it is dangerous to your health… Why?

- Most of the medications used for doping were created for people with specific diseases or health problems. They were not created to be used by healthy athletes.
- Athletes who dope often take the substances in higher doses than recommended and in combination with other medications.
- Many of the substances doping athletes take are made illegally. They could be contaminated or may not have been tested clinically and these could cause serious health problems or even cause death.

What about dietary, nutritional or herbal substances?

Supplement companies do not have to follow the same manufacturing and labelling practices as pharmaceutical companies. You never really know if what you are putting into your body is what you think you are. You could be taking a banned substance without even knowing it!

Get the Facts...

The side effects of some doping substances:

Steroids

- Psychological dependence, increased aggression and mood swings
- Increased risk of liver and cardiovascular disease
- High blood pressure
- Acne and baldness

Also in males

- Shrinking testicles
- Sexual side effects (reduced sperm production, impotence, libido disorders)
- Breast growth

Also in females

- Development of male features (deepening of the voice and excessive hair growth on face and body)
- Abnormal menstrual cycles
- Enlarged clitoris

Marijuana

Long-term use can result in the following health consequences:

- Psychological and physical (withdrawal) dependence
- Loss of attention and motivation
- Impaired memory and learning abilities
- Weakening of the immune system
- Respiratory diseases such as lung and throat cancer and chronic bronchitis
- Psychosis

Get the Facts...

Stimulants

- Psychological and physical (withdrawal) dependence, anxiety and aggression
- Increased and irregular heart rate and increased blood pressure
- Increased risk of stroke, cardiac arrhythmia and heart attack
- Dehydration
- Problems with coordination and balance
- Tremors
- Insomnia
- Memory loss
- Loss of appetite

EPO (erythropoietin)

- Increased blood viscosity (thickness/stickiness)
- Pulmonary embolism
- Increased risk of heart attack and stroke
- General weakness
- High blood pressure

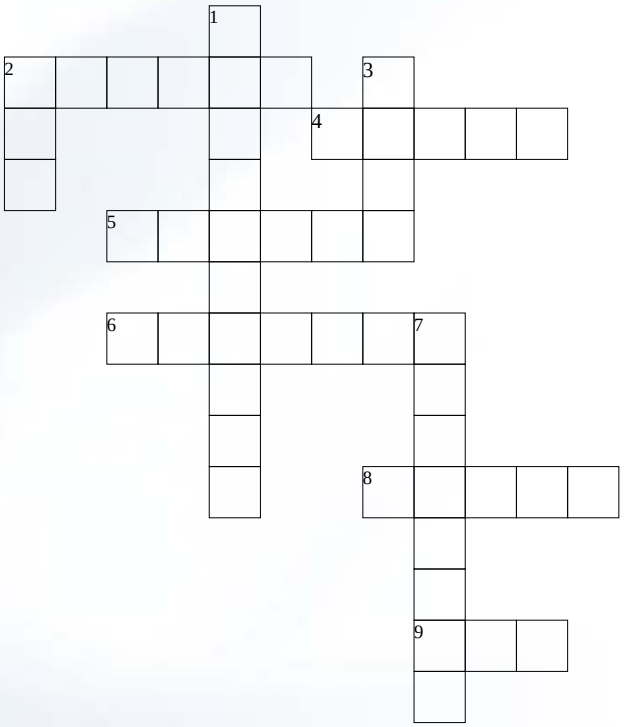
hGH (Human Growth Hormone)

- Severe headaches
- Loss of vision
- High blood pressure and heart failure
- Diabetes and tumors
- Crippling arthritis
- Irreversible acromegaly (enlargement of the hands and feet, and protruding forehead, brow, skull and jaw)
- Liver and thyroid damage
- Heart enlargement
- Water retention

Recognizing the Dangers of Doping

Are you aware of the side effects of using a banned substance?

Complete the crossword below by identifying the risks associated with doping substances.



Across:

2 - Doping is dangerous because athletes often take the substances in higher _____.

4 - True or False: Supplement companies have to follow the same manufacturing and labeling practices as pharmaceutical companies.

5 - Athletes should take great caution when using a dietary supplement since they could contain a _____ substance.

6 - Using this banned substance could result in shrinking testicles and breast growth in men, deepening voice and hair growth in women.

8 - Using a contaminated substance that was illegally produced could result in serious health problems or even _____.

9 - Using this substance could result in your blood becoming thick and sticky.

Down:

1 - Using steroids, marijuana or stimulants could result in this common side effect: Psychological _____

2 - Using this substance could cause crippling arthritis, loss of vision and cause your hands and feet to become enlarged.

3 - A person who uses steroids could become _____.

7 - Most medications used for doping were created for the treatment of specific _____.

Doping Substances and their Health Consequences

Why is doping so dangerous?

We know that doping is dangerous to an athlete's health…But why?

- Studies on substances for therapeutic reasons, not for doping
- Substances or methods used by athletes are developed for people with health problems
- Athletes using prohibited substances :
  - ✓ Are not always followed by a doctor
  - ✓ Often take larger doses
  - ✓ Might use in combination with other substances
- Are often illegal or counterfeit substances that are not regulated

How does a substance become prohibited?

What is the Prohibited List?

It is the document identifying the substances and methods that are prohibited in-competition, out-of-competition, and in particular sports.

How does a substance become prohibited?

What are the criteria for adding a substance to the List?

Must meet any 2 of the following 3 criteria:

- It has the potential to enhance or enhances sport performance;
- It represents an actual or potential health risk to the athlete;
- It violates the Spirit of Sport.

Steroids

General side effects:

- Psychological dependence
- Increased aggression
- Mood swings
- Increased risk of liver disease
- Increased risk of cardiovascular disease
- High blood pressure
- Acne
- Baldness

Steroids

Also in Males:

- Shrinking testicles
- Sexual side effects (reduced sperm production, impotence, libido disorders)
- Breast growth

Also in Females:

- Deepening of voice
- Excessive hair growth on face & body
- Abnormal menstrual cycles
- Enlarged clitoris

Steroids

Also in Adolescents:

- Premature puberty
- Stunted growth as a result of premature closure of the growth plates of the bones

Cannabinoids (Marijuana)

Long-term use may result in:

- Psychological dependence
- Physical dependence (withdrawal)
- Loss of attention and motivation
- Impaired memory and learning abilities
- Weakening of the immune system
- Respiratory diseases (lung cancer, throat cancer & chronic bronchitis)
- Psychosis

Stimulants

- Psychological and physical (withdrawal) dependence
- Anxiety and Aggression
- Increased and irregular heart rate
- Increased blood pressure
- Increased risk of stroke and heart attack
- Dehydration
- Problems with coordination and balance
- Tremors
- Insomnia
- Memory loss
- Loss of appetite

Erythropoietin (EPO)

- Increased blood viscosity (thickness/stickiness)
- Pulmonary embolism
- Increased risk of heart attack and stroke
- General weakness
- High blood pressure

Human Growth Hormone (hGH)

- Severe headaches
- Loss of vision
- High blood pressure and heart failure
- Diabetes and tumors
- Crippling arthritis
- Irreversible acromegaly
  - Enlargement of the hands & feet
  - Protruding forehead, brow, skull & jaw
- Heart enlargement
- Water retention
- Liver and thyroid damage

Case Studies

The following cases have been modified from actual stories posted on the Taylor Hooton Foundation Web site (http://www.taylorhooton.org).

Case 1 - Rob

Rob was like many boys. An all around great kid, he grew up playing baseball, emulating his favorite sports heroes, and dreaming of making it to the major leagues.

As early as high school, Rob was encouraged by some of his coaches to add supplements and other weight gaining compounds to a muscle-building training program. He was actually provided creatine as well as weight gainers and protein powders.

He was thriving, happy, and successful. His hitting, running speed, throwing arm strength, and defensive skills were considered excellent. Nonetheless, he was told the only way he could improve his game was to “get bigger.” When supplements and workouts did not produce the desired results, Rob turned to steroids, which he obtained from his trainer.

Rob began to gain weight, his upper body muscle mass increased, he began losing hair, had acne on his back and shoulders and his mood became irrational with Rob falling prey to uncontrollable rages. He was once placed with Psychiatric Emergency Services after assaulting his father and threatening suicide.

Case Studies

Case 2 - Taylor

Those who knew Taylor described him as a young man who smiled often, was popular with girls and had many friends. Taylor began to develop acne on his back and to exhibit signs of aggressiveness and irritability that are often associated with steroid use. He flew into rages, then would become tearfully apologetic. He took several hundred dollars from his parents' bank account without permission. He would pound on the floor with his fists in anger. Once he punched a wall and injured a knuckle on his pitching hand.

Taylor was tested for drugs. When the test came back clean, Taylor told his parents, "I told you I hadn't been doing anything." His parents later discovered that the screening had only involved recreational drugs, not steroids.

Case 3 - Efrain

At age 19, Efrain had grown to be a fine, respectable young man. He was fiercely committed to his family. He had the highest respect for his parents and he was very kind hearted.

Efrain had been secretly using steroids to prepare for football season. He had been a standout offensive lineman in high school and was now playing at the junior college level. However, he decided he wanted to move from the offensive line to more of a "glory" position as middle linebacker. Any football fan seeing Efrain would recognize the significant physical transformation it would take for him to make that move. That transformation was exactly what he was after when he turned to steroids.

Efrain began having episodes of paranoia and deep depression. He told his parents that during one of his college classes he felt people were looking at him and laughing. His mood swings, his rages, his depression, his obsession with his appearance, his rapid fat loss and muscle gain – all were "below the radar" because his parents were, regrettably, unaware.

Case Studies

Case 4 – Dionne

She just wanted six-pack abs. So in the summer of 2003, Dionne, a 17-year-old high school cheerleader, gymnast, and vice president of her high school class, made a decision she regrets. She bought anabolic steroids from a boy on the school football team.

“Nobody frowned upon it," she says. "It was easier for me to get those than it probably was to buy beer."

But after injecting herself with Winstrol every other day for five weeks, she became suicidal. She had no idea of the psychological or physical effects steroids would have on her mind or body. Instead of six-pack abs, Dionne gained 10 pounds of muscle. She ate everything in sight. This wasn’t what she wanted!

She began to fight with her parents and friends. She was miserable and wasn’t sure what she wanted. With her life spiraling out of control and not knowing what else to do or where to go for help, Dionne tried to commit suicide, twice.

Teen Unit 3:
How do we Protect Sport from Doping?

Introduction

The ultimate goal in fighting doping in sport is to promote healthy, fair and equal competition, and therefore preserving the athlete's right to clean sport. There are three ways in which doping in sport is fought, namely: detection, deterrence and prevention. The role of these three areas will be explored in this unit.

Detection: What most people know about doping in sport is what is reported in the media. We know that athletes test positive for substances that are banned. We know that they can be sanctioned and suspended from sport. But what organizations are responsible for this? What exactly is the process that an athlete goes through to determine whether he/she is using a banned substance? In this unit, students will be introduced to the sample collection process.

Deterrence: What discourages us from engaging in any risky behaviour? Is it the fear of getting caught? Is it simply because we know it is wrong? Is it the consequences of engaging in the behavior, whether it is social, physical or emotional? In this section of the unit, students will reflect on the factors that deter them from engaging in risky behaviour. The focus will be on what rules are in place and the consequences of breaking these rules.

Prevention: If there were no anti-doping rules, why would athletes compete cleanly? What would stop them then? For athletes who are not tested, such as those at the school level, what stops them from using doping substances? What are the social consequences of doping? How do values and morals come into play? In this section of the unit, students will be encouraged to think of ways to prevent athletes or students in their school from engaging in doping and reinforce the Spirit of Sport Values.

What topics will be covered in this unit:
- What does the doping control process involve?
- What happens when a laboratory analysis reveals a positive?
- What sanctions are imposed?
- How can doping be prevented?

What activities will be presented in this unit:
- Understanding the Doping Control Process
- Applying Sanctions
- Doping Prevention Campaign

What resources are included in this unit:
- *Doping Control Process* Handout
- *What Happens Once the Sample is Collected* Handout

What skills will be put into practice in this unit:
- Critical thinking
- Reading comprehension
- Written expression
- Oral expression
- Collaborative learning

Lesson 1: Protecting Sport from Doping

Purpose: The purpose of this lesson is to introduce students to the sample collection and post-collection processes.

Materials included:
- *Doping Control Process* Handout
- *What Happens Once the Sample is Collected* Handout
- *Applying Sanctions* Worksheet
- *Doping Control Process* Worksheet

Learning objectives:
- To introduce students to the sample collection process
- To introduce students to the post sample collection process
- To have students consider the importance of anti-doping rules
- To have students consider whether anti-doping rules violate athlete rights

Detection: The sample collection process

Background: There are often media reports of an athlete testing positive, but very little, if any, information is provided on how an athlete is tested. This section provides an overview of the doping control process. Athlete testing or doping controls are conducted in the same way around the world and must follow the procedures outlined in the World Anti-Doping Code (Code) and the International Standard for Testing (IST). Athletes who compete at the international and national level may be tested anytime, anywhere, by specially trained and accredited doping control personnel.

What is involved when an athlete is tested for performance enhancing substances (doping control)?

– **Discussion:** Ask students to name athletes who have tested positive or have been banned from sport because they use performance enhancing substances. Responses may include:

- Athletics: Ben Johnson (1988, Canada); Dwain Chambers (2003, UK); Justin Gatlin (2006, USA)
- Cycling: Floyd Landis (2006, USA); Tammy Thomas (2000 & 2001, USA)
- Skiing: Olga Danilova (2002, Russia)
- Swimming: 11 Chinese swimmers tested positive at the 1994 Asian Games
- Weightlifting: 11 Greek weightlifters and 11 Bulgarian weightlifters tested positive leading up to the 2008 Beijing Olympics
- Soccer/football: René Higuita (2004, Colombia); Fernando Couto (2001, Portugal)

Note: You may wish to include local doping cases as well. You can find examples on Wikipedia (see link below). Although this list is not official or exhaustive, it is a good resource to find examples of athletes who have tested positive from your region or from a sport that is popular with your students.
http://en.wikipedia.org/wiki/List_of_athletes_found_guilty_of_using_banned_drugs

- **Activity:** Ask students how they think an athlete is "caught" taking a banned substance. What do they know about collecting a sample for doping control? Ask students how they think athletes are selected to be tested.

- Provide students with the *Doping Control Process* handout, which outlines how athletes are selected for testing as well as the steps for collecting and processing a sample.

  Note: A handout with questions to accompany the Doping Control Process handout is included. These questions could be given to students to complete individually or in small groups, could be used as the basis of an in-class debate or could simply be used to facilitate a teacher-centered discussion. The box on the following page contains the questions included in the handout as well as possible responses.

The following are possible responses to the questions included in the Doping Control Process Questions handout. Not all answers are found in the text of the Doping Control Process handout. These are included to encourage students to think critically about why rules are put into place.

1) *Why is it important that all countries and all sports follow the same rules?*
   - To ensure that all athletes - no matter where they are competing, being tested or which sport they are competing in – are treated in the same way.

2) *Why do you think it is important that athletes are tested in-competition and out-of-competition?*
   - If athletes were only tested in-competition, athletes could be taking substances between competitions that could be out of their systems by the time they were tested, but the benefits of taking the substance could last. If athletes were only tested out-of-competition, athletes could take substances at the time of competition that could give them an unfair advantage but would not be detected by the time the athlete was tested.
   - There are several reasons why athletes are tested for performance enhancing substances, a major reason being to preserve the health of athletes. By only testing in- or out-of-competition, athletes could be putting their health at risk by taking a substance because they know they will not get caught.

3) *Do you think it is fair that athletes can be tested anytime and anywhere? Why? Why not?*
   - Testing is done to ensure that the rights of the clean athletes are preserved.
   - Athletes are tested anytime and anywhere to add to the element of surprise. If the athlete knows he/she is going to be tested, he/she could cover-up the fact that he/she is using substances by taking a masking-agent, using someone else's urine, etc..

4) *Do you think it is fair that athletes should have to tell Anti-Doping Organizations where they are and when? Why? Why not?*
   - Whether we are a student or an athlete, we have certain responsibilities. Students have to provide a note when they miss school and they have homework that they must do. Being an elite level athlete comes with responsibilities. Part of the homework athletes have to complete is to submit whereabouts information stating where they will be and when. This lets the organizations that coordinate testing know when they are available to be tested.

5) Do you think it is fair that someone witnesses the athlete providing his or her sample? Why? Why not?
   - Testing is done to ensure that the rights of the clean athletes are preserved and a clean athlete has nothing to hide. Unfortunately because there are athletes who try to cheat the system, having someone observe the passing of the sample ensures its integrity.

Deterrence: Sanctioning

Note: This section explores the process that is undertaken once a sample has been analyzed at a WADA accredited laboratory and a positive result has been found. The material included has been simplified. For more detail on the process and sanctions, please refer to the World Anti-Doping Code, which can be consulted on our Web site at the following location:
http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=250

What is the process once a positive sample is found?

- **Discussion:** Ask students what prevents them from doing something "wrong." Responses may include:

  - Fear of getting caught
  - Knowing it is wrong
  - Worried about how people will treat me
  - Worries about my parents/teachers being angry
  - Possibility of getting hurt

- Ask students if they would still break a rule if they knew that there was no way that they would get caught or no consequences for being caught.

- Explain to students that in previous activities you looked at doping from an ethical and health consequences point of view. In this section they will look at the rules and sanctions for doping.

- Explain to students that once a sample is collected, it is sent to a WADA accredited laboratory to be analyzed.

  Note: A list of WADA accredited laboratories can be found on WADA's Web site, at the following location:
  http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=333.

- **Activity:** Provide students with the *Post-Collection Process* handout, which outlines the process an Anti-Doping Organization follows when the laboratory reports finding a prohibited substance in a sample. The handout also outlines the athlete's rights.

- Ask students, either individually or in small groups, to create a diagram illustrating the post-collection process.

Stages in the post-collection process –

- Laboratory detects a prohibited substance or method in an athlete's sample.
- The International Federation (IF) or National Anti-Doping Organization (NADO) is advised of the findings.
- The IF or NADO conducts an initial review to see if the athlete has a valid Therapeutic Use Exemption (TUE) for the substance.
- If the athlete has a valid TUE, no further action. If the athlete does not have a valid TUE, the athlete is notified that a prohibited substance or method was found in his/her sample.
- The athlete can request to have his/her B sample analyzed.
- If the B sample does not confirm the findings of the A sample, no further action. If the B sample does confirm the findings of the A sample, the athlete has the right to a hearing and can appeal any sanction imposed.
- A sanction is imposed based on the substance found, circumstances and whether or not it was a first time offence.

– Provide students with the *Applying Sanctions* worksheet. This activity asks students to decide what type of sanction will be given to the athlete in each case, based on the information provided in the *Post-Collection Process* handout.

***Applying Sanctions* Worksheet – Answer Key**

Case 1: Christie (in-competition)
- Anti-doping rule violation: Use of a prohibited substance
- Sanction: 2 years, loses points towards ranking, has to return prize money

Case 2: Jonathan
- Anti-doping rule violation: Has twice not submitted updated whereabouts and has missed a test (not at training site as indicated in whereabouts information submitted). This is a combination of three missed tests and failures to provide accurate whereabouts information in 18 months.
- Sanction: 1-2 years

Case 3: Suzie
- Anti-doping rule violation: Administering a prohibited substance
- Sanction: Lifetime ban (since this was her second anti-doping rule violation, since she was sanctioned as an athlete and again as a coach)

Prevention: Making the right decision

Background: We fight doping by testing athletes and imposing sanctions. Another component is launching campaigns, where athletes and the public are provided with the information they need to make the decision to follow the doping or the anti-doping path. In this section, students will come-up with their own prevention strategy.

– **Discussion:** Ask students if they know of any prevention campaigns. Responses may include:

- AIDS/HIV
- Tobacco/smoking
- Road safety
- Drinking and driving
- Drugs

– Ask students to explain the typical elements of these campaigns, including:
  - Medium of delivery
  - Components of the program
  - What works?
  - What doesn't work?

– **Activity:** Explain to students that they will be asked to create their own Doping Prevention Campaign. In creating their campaign, students should consider the following:
  - Target audience: Who is the campaign aimed at? Elite athletes? Young athletes? Students at your school? General public?
  - Key messages: What are the key messages that they want to convey to their target audience?
  - Medium: What is the best way to deliver the message? Their campaign can take any form (as long as they are able to bring it to life), including a poster, video, music, skit, game, art project, etc..

- Implementation: What is their strategy for implementing their program? This could simply be a plan rather than actually carrying out all of the activities. For example, if students decide to have a poster campaign, they should say where they would put their posters in order to have the greatest exposure/reach. If they create a video, they should say where it would broadcast/distributed.
- Evaluation: Was their campaign successful? How do you measure the success of a campaign? Again, this could be something that students report on rather than actually implement. Ideas may include a survey, the number of positive tests, etc..

Note: This activity could be done individually or in small groups. You may wish to have students provide a project plan or report summarizing the points above. Alternatively, you may wish to have students orally present their campaign to their classmates.

Note: WADA would appreciate seeing/reading what your students have to say. Please feel free to send WADA your students' work (written, filmed, pictures) by e-mail (info@wada-ama.org), by fax (+1 514 904 4451) or by post:

World Anti-Doping Agency
Attention: Education Department
Stock Exchange Tower
800 Place Victoria (Suite 1700)
PO Box 120
Montreal, QC
H4Z 1B7

Doping Control Process

Athletes competing at a national or international level may be selected for doping control. The term doping control refers to the process where athletes are asked to provide a urine and/or blood sample to make sure that they are not taking a prohibited, or banned, substance. Athlete testing or doping controls are conducted in the same way around the world and must follow the procedures outlined in the World Anti-Doping Code (Code) and the International Standard for Testing (IST). Athletes may be tested anytime, anywhere, by specially trained and accredited doping control personnel.

How are athletes selected for doping control?

Under the Code, Anti-Doping Organizations must plan and implement an effective number of in-competition and out-of-competition tests. As part of this plan, Anti-Doping Organizations create a pool of athletes that they will use to select from for testing. This is referred to a Registered Testing Pool. Anti-Doping Organizations can also test athletes that are not part of a Registered Testing Pool.

When are athletes tested?

Athletes can be tested anytime and anywhere. They are not told when or where they will be tested, but they must give Anti-Doping Organizations information about their daily schedules. This includes when they will be training, competing, studying, working, and travelling.

An Anti-Doping Organization can decide to collect samples at a competition or event. This is called *in-competition testing*. For in-competition testing, the Anti-Doping Organization will set criteria for how to select athletes for doping control, for example this could be done randomly or based on the finishing position.

An Anti-Doping Organization can also decide to collect samples *out-of-competition*. For out-of-competition testing, doping control personnel could

Doping Control Process

collect samples from an athlete at his/her training site or even his/her home. The Anti-Doping Organization will tell the doping control personnel who to test.

How are samples collected?

There are several steps in the doping control process. Samples are collected in the same way in all countries and in all sports.

Notification:

Doping control personnel will notify the athlete that he or she was selected for doping control. At this time, the athlete is informed of his/or her rights and responsibilities, including the right to have a representative present through the doping control process. The athlete is asked to sign a form confirming that he or she has been notified that he or she was selected for doping control. The athlete will be accompanied by a member of the doping control personnel from the time he/she is notified until he/she completes the doping control process.

Reporting to the doping control station:

Athletes are required to report to the doping control station, or the area where the sample will be processed, as soon as possible after being notified that they have been selected for doping control. If an athlete has to delay reporting to the doping control station, because of a press conference, medal ceremony, or to continue competing or training, he or she will be accompanied by doping control personnel.

Providing a sample:

When an athlete is ready to provide a urine sample, someone from the doping control personnel, of the same gender as the athlete, will accompany the athlete to the toilet area. The athlete will provide the urine sample in full view of the doping control personnel. This is to help prevent possible manipulation of the sample.

Splitting the sample:

When the athlete returns to the doping control station with his or her sample, the doping control personnel will ask him or

Doping Control Process

her to split the sample between two bottles and seal it. The split samples are referred to as the athlete's A sample and B sample. When the sealed samples are sent to the laboratory for analysis, the A sample is analyzed and the B sample is kept in a freezer in case it is needed to confirm the results of the A sample analysis.

Completion of the doping control form:

A form is completed during the doping control process. This form provides information to the Anti-Doping Organization, such as the athlete's address, and any medications the athlete had taken recently. A number is assigned to the sample which is also written on the form. A copy of the form goes to the laboratory with the sample. The laboratory copy of the form will not contain any information that could identify the athlete. Only the sample code number is included. Before signing the form, the athlete will review the form to ensure that all of the information is correct and can write any comments or concerns he or she has about the process on the form.

The laboratory process:

Samples are packaged for shipping to ensure that the security is tracked. The samples are sent to a WADA accredited laboratory. The laboratory will inspect the samples upon their arrival to ensure there is not evidence of tampering. The laboratory will analyze the A sample for substances on the Prohibited List. The laboratory will report the results the of the sample analysis to the Anti-Doping Organization.

Doping Control Process

Answer the questions below, based on what you have learned about the doping control process.

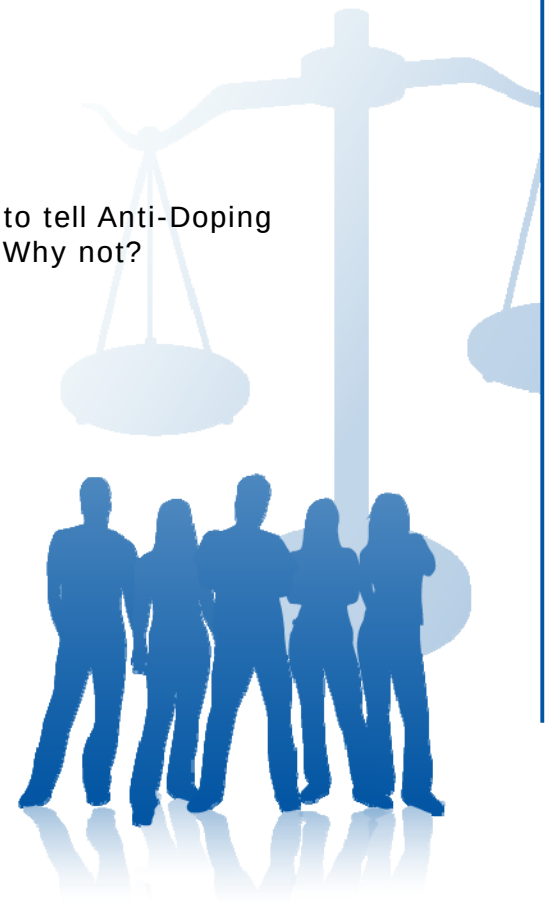
1) Why is it important that all countries and all sports follow the same rules?

2) Why do you think it is important that athletes are tested in-competition and out-of-competition?

3) Do you think it is fair that athletes can be tested anytime and anywhere? Why? Why not?

4) Do you think it is fair that athletes should have to tell Anti-Doping Organizations where they are and when? Why? Why not?

5) Do you think it is fair that someone witnesses the athlete providing his or her sample? Why? Why not?



Post-Collection Process

What happens once the sample is collected?

What process does the sample undergo between being collected and the report of an athlete testing positive?

The sample arrives at the laboratory

Once an athlete provides a sample and it is sealed in the appropriate container, prepared for shipping, and is delivered to a laboratory for analysis. Only laboratories that have received accreditation or official approval from the World Anti-Doping Agency (WADA) can analyze samples for doping control. These laboratories must follow the same guidelines, which are given to them by WADA.

The results are in

After analyzing the sample, the laboratory will send the results to the organization that requested the test. If a laboratory discovers an adverse analytical finding, a potential positive test, the results will be sent to the Anti-Doping Organization that authorized the test, the International Federation that governs the sport the athlete competes in and WADA.

Therapeutic Use Exemption (TUE)

When the laboratory reports an adverse analytical finding, the National Anti-Doping Organization will review results and verify whether the athlete received permission to use the substance that the laboratory found in the athlete's system.

Athletes, like all others, may have illnesses or conditions that require them to take particular medications. If the medication an athlete has to take falls under the Prohibited List, he/she can receive permission to take the medication

Post-Collection Process

by applying for a Therapeutic Use Exemption (TUE). However, an athlete has to prove, with medical evidence that this medication is needed. The athlete is not allowed to take the medication until the TUE is approved.

If it is determined that an athlete has a TUE for the prohibited substance found in the sample, no further action is taken. It is not considered a positive test and the athlete will not be sanctioned.

Athlete is notified

If it is determined that the athlete did not have a TUE for the substance found in the sample, the athlete will be advised that his/her sample has come back positive for a prohibited substance.

Athlete's rights

Once an athlete has been advised of the positive test the athlete has the right to have the B sample analyzed. The athlete has the right to be present when the B sample is opened. When any sample is collected, it is split into an A and B sample to ensure that the results were not due to an error in the laboratory process. Should the B sample have the same result as the A sample the athlete has the right to present evidence at a hearing. Even if the positive test is up-held after the hearing and a sanction is imposed, the athlete can appeal the sanction.

Sanctions

The sanction or consequences for a positive test depends on the type of violation, the circumstances of the case, which substance the athlete took, and whether this was a first time or repeat violation. Any results, medals, points and/or prizes won during a competition where an athlete tests positive will be lost.

Post-Collection Process

Type of Violation	Range of Sanctions
Possession or use of a prohibited substance	**Minimum** – Reprimand (with proof of contaminated products on specified substances) **Standard** – 2-4 years
Refusing to be tested	**Standard** – 4 years
Trafficking or administering	**First violation** – 4 years to lifetime
Combination of 3 whereabouts failures (within 12 months)	**First violation** – 2 years

Please note that in some cases sanctions can go up to a lifetime ban.

Post-Collection Process

Type of Violation	Range of Sanctions
Tampering with the testing process	**Standard** – 4 years
Encouraging or assisting and athlete to dope or providing a doping substance	**Standard** – 2 - 4 years
Administration	**Standard** – 4 years to lifetime
Prohibited Association	**Standard** – 2 years

Please be aware that sanctions can go up to a lifetime ban in some cases

Applying Sanctions

Which sanction should be applied to each case? For each of the cases below, determine:

1) Which anti-doping rule did the athlete violate?
2) What sanction should be imposed on the athlete?

Christie is an international-level tennis player. She recently placed third at a tournament, which helped her move up in the rankings and giving her prize money. Ten days later, Christie received a letter from her sport federation advising her that the sample that was collected during the tournament had nandrolone (an anabolic steroid) in it. Christie asked to have her B sample analyzed, which also came back positive for nandrolone.

-

_____

_____

As a world-class hurdler, Jonathan has to let his International Federation know when and where he is training, competing, living and working. Like all athletes competing at this level, he has to submit whereabouts information on a regular basis and make sure it is up-to-date. Jonathan doesn't enjoy doing this type of paper work – he just wants to be an athlete! His International Federation has warned him that he has missed submitting his whereabouts twice. Finally, he was not at the track when he had indicated in his whereabouts.

-

_____

_____

Suzie was a good basketball player in college. She had a scholarship to attend a good school, but all of that was lost when she was caught selling steroids to a teammate. She lost her scholarship and was given a four year ban from competing. 15 years later, Suzie had changed her life around and was now coaching basketball. She was finally clearing her name. That is until one of her players tested positive for human growth hormone and it was revealed that it was Suzie that had given it to her.

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Teen Unit 4: Taking Sides

Introduction

Now that students are aware of why organizations such as the World Anti-Doping Agency (WADA) fight doping in sport, have students share what they think. This section provides suggested topics, activities and resources that provide for an opportunity to presenting different positions on anti-doping issues, although students may be invited to come-up with their own topics that are of interest to them.

What topics will be covered in this unit:
- Review of all material included in the Tool Kit

What activities will be presented in this unit:
- A debate
- Oral presentation
- Position paper

What resources are included in this unit:
- *Why Fight Doping* Handout
- *Medical Supervised Doping* Handout

What skills will be put into practice in this unit:
- Critical thinking
- Reading comprehension
- Written expression
- Oral expression
- Collaborative learning

Lesson 1: Debating the Issue of Doping in Sport

Purpose: The purpose of this lesson is to have students think critically about the issue of doping, athlete rights, the role of values and the role sport plays in society in general.

Materials included:
- *Why Fight Doping* Handout
- *Medical Supervised Doping* Handout

Learning objective:
- To consider the difference sources of influence in an athlete's decision making process regarding doping

Suggested Activities:

Background: Several activities and resources are presented in this section as a way of having students review and think critically about what they learned about doping. You may wish to have all students complete the same activity or allow students to choose which type of activity they wish to complete.

- Debate:
  - The debates could be done in small groups (2-3 students) or individually.
  - Allow students to choose a topic and a side for the debate. Alternatively, students could be assigned to a topic and side. Provide students with the necessary time to research the topic and prepare their arguments (1-2 weeks). Ensure that at least one student/group is assigned to the pro and con side for each topic.
  - Beginning with the pro side, allow each side 5-7 minutes for the initial presentation of their position.
  - Following the initial presentation, provide students with a few minutes to prepare for their rebuttal.
  - Beginning with the con side, allow each side 3 minutes to present their rebuttal.
  - Allow the rest of the class to ask questions.

- Oral presentation:
  - Allow students to choose or assign each student a topic and position.
  - Ask students to prepare a 5-10 minute oral presentation presenting their position. Student arguments should be supported by facts as well as personal opinion.
  - Allow the rest of the class to ask questions.

- Position paper:
  - Allow students to choose or assign each student a topic and position.
  - Ask students to write an essay or composition presenting the topic and position. Provide students with guidelines on length.
  - Explain to students that the paper should include an introduction (introducing the topic, providing background and state position on the topic), counterarguments (summarizing counterarguments and refute these claims), presentation of their arguments and a conclusion.

- Research report:
  - Allow students to choose or assign each student a topic.
  - Ask students to research and to present both sides of the topic in a written format. Provide students with guidelines on length.
  - The paper should include an introduction (introduce the topic and background), body (present a summary of the points from both the pro and con position) and conclusion (summarize in a paragraph or two what was presented and present your position based on all the information presented).

Suggested topics:

- "If all athletes are allowed to dope, then sport is fair"
- "Doping under supervision is safe"
- "Doping rules go against athletes' rights"
- "Doped athletes are too far ahead to be caught up"
- "Gene manipulation should be allowed to put athletes at a level playing field"

Suggested resources:

Note: Although the following resources were not specifically for teenagers, they may be useful in assisting with their research/preparation.

- Gene Doping:
  - Issue 1/2005 of WADA's Play True Magazine - http://www.wada-ama.org/rtecontent/document/Play_True_01_2005_en.pdf
  - Issue 2/2007 of WADA's Play True Magazine - http://www.wada-ama.org/rtecontent/document/Gene_Doping_Theodore_Friedman_PlayTrue2007_SummerResearch_En.pdf
  - Issue 3/2008 of WADA's Play True Magazine - http://www.wada-ama.org/rtecontent/document/PT_ISSUE_3_2008_ENG_FINAL.pdf
  - Gene Doping brochure created by Anti-Doping Switzerland - http://www.antidoping.ch/en/verbotene-methoden/gene-doping.html
- Ethical rationale:
  - Handout – "An Open Letter to Those Promoting Medical Supervision of Doping"
  - Handout – "Why Fight Doping"
- Health Consequences of doping:
  - Handout – "Get the Facts" (see Health Consequences section of this Tool Kit).

Note: WADA would appreciate seeing/reading what your students have to say. Please feel free to send WADA your students' work (written, filmed, pictures) by e-mail (info@wada-ama.org), by fax (+1 514 904 4451) or by post:

World Anti-Doping Agency
Attention: Education Department
Stock Exchange Tower
800 Place Victoria (Suite 1700)
PO Box 120
Montreal, QC
H4Z 1B7

Why Fight Doping?

There are many reasons to support the fight against doping in sport. Some of these reasons are explored in the text below.

Rules of the Game

What would your favorite sport be like if there were no rules? You could play with as many players on the field or court as you wanted. There could be many balls on the field at the same time. There were no lines on the track or lanes in the pool. There were no boundaries on the field of play.

Rules ensure that, all other things being equal, competitors have an equal chance of winning, thereby maintaining the excitement inherent to sport. Sports are fun to watch or play because you never really know who is going to win and who will lose.

There are rules about the length of hockey sticks. Some sports have weight or age categories. All rules are designed to prevent any participant from taking an unfair advantage over another. Including anti-doping rules.

Personal Integrity

Cheating is disrespectful towards yourself and towards others. When you break the rules, you break the agreement that you have with your opponent that you are fighting the same good fight, playing the same game.

Does a victory obtained by cheating feel the same? Maybe you can walk away with the medal, the prize, the fame and glory, but behind closed doors you will always wonder whether you could have achieved this by yourself, without artificial means.

You are entitled to expect your opponents to respect you. The fight against doping in sport is also meant to ensure that cheaters are not allowed to compete against clean athletes.

Why Fight Doping?

Anti-Doping Rules Protect Athlete Rights

Anti-doping rules protect the right of athletes to compete in sport and against others free from doping. This protects athletes from feeling compelled to dope to be competitive. It ensures healthy and safe competition.

Anti-doping rules seek to protect the Spirit of Sport and ensure that sport remains a worthy human activity. It ensures that youth and future athletes are provided with doping-free role models.

What about Supervised Doping?

An Open Letter to Those Promoting Medical Supervision of Doping

By Dr Alain Garnier

Medical Director, World Anti-Doping Agency

Lausanne, Switzerland, August 11, 2006

Following recent declarations of certain doctors who consider that doping is necessary and even healthy for athletes, it is time to reaffirm, once again and without equivocation, some very basic principles in medical practice and deontology.

If one is considering, in one's role as a sports physician, that elite sport is not healthy, then it means that this kind of practice is not well adapted to human physiology. If this is true, then it is difficult to justify the support and involvement of physicians in sports. After all, medical doctors have the obligation to protect the health of the athletes.

If a particular situation in sports is not compatible with human physiology and may be detrimental to the health of the athlete, one has in fact only two options: to change the sport or the rules that govern that sport to make it more compatible with the human condition, or to adapt athletes to the sport. The former is the action supported by the scientific literature in physiology, public health, and occupational medicine. The latter, regrettably chosen by certain doctors, leads one to justify doping as "indispensable."

To change sport or to change humans? That is the question. Given the imminence of gene therapy, we must not delay in addressing this question once and for all.

What about Supervised Doping?

Always and without exception, a medical doctor should follow the principles of medical practice and defend the health of the athlete, independent of the level of competition or the potential economic consequences. In turn, sport organizations should always ensure this right to physicians, guaranteeing physicians independence in their medical decisions and protecting them from conflicts of interest. When faced with a situation that poses a threat to the athlete's health, a physician should neither accept the situation, nor act to render it bearable. Not following these basic principles of medical ethics leads to very serious consequences. Should a physician confronted with torture propose medical support in order to make it less detrimental to the individual? Certainly not, but those who propose medical supervision for doping are following exactly the same distorted logic.

In addition to the ethical reasons presented above, many other medical arguments oppose the acceptance of medically supervised doping.

Regardless of whether drugs or methods used for doping purposes can effectively enhance performance, there exists no scientific evidence that such practices are healthy, particularly in the mid- and long-term. Depending on the nature of the substance used for doping, the athlete may be able to compete for a longer time, perform faster, tolerate higher workloads, or better withstand pain—but these are certainly far from beneficial to health.

To illustrate this point, one should consider a question frequently asked of physicians: in case of injury or fever, what should the legitimate medical attitude be? In general medical practice, the answer is always clear. Why should it be any different in sport? Can one imagine a doctor prescribing amphetamines to a truck driver because he or she is too tired to continue driving?

The use of even the most common drugs is associated with risks and potential side effects. Given this basic fact of pharmacology, any physician must understand the risk/benefit ratio before writing any prescription. Promoting doping for all athletes contradicts this basic principle of medicine. To argue that medically supervised doping is safer because a doctor is in charge misses the point entirely. There exists

What about Supervised Doping?

no credible data indicating that a drug is less dangerous when prescribed by a doctor. Everyday, in hospitals and clinics worldwide, patients experience the side effects of drugs despite strict monitoring by highly experienced doctors.

In medical practice the use of drugs is very strictly codified with indications and contra-indications. There is no evidence that competing in sports or exhausting exercise is an indication for the use of EPO or blood transfusions. Accepting this use (or misuse) of pharmacological agents is equivalent to defining sports medicine as the experimental practice of medicine in athletes and to use athletes as research subjects without their consent, therefore denying the rules of such a “medicine.”

Contrary to what the physicians defending doping pretend, accepting the idea of medical supervision of doping would immediately and irremediably lead to a generalization of doping and an exclusion from sport of all clean athletes who are opposed to using unnecessary drugs and want to defend the spirit of sport. To encourage doping may be beneficial for their promoters, but not for sport and athlete health.

To pretend that allowing doping would induce an equal playing field is not simply absurd; it is morally wrong and irresponsible. To accept doping would allow the use of economic resources and scientific expertise to decide competition, and only those with access to those resources and expertise would win. Can one imagine a wider inequity in this world than that of scientific knowledge and availability of medicines? Certainly not. It would mean the end of merit for athletes. It would mean that prizes and medals would no longer be awarded to athletes but to pharmaceutical companies and research teams.

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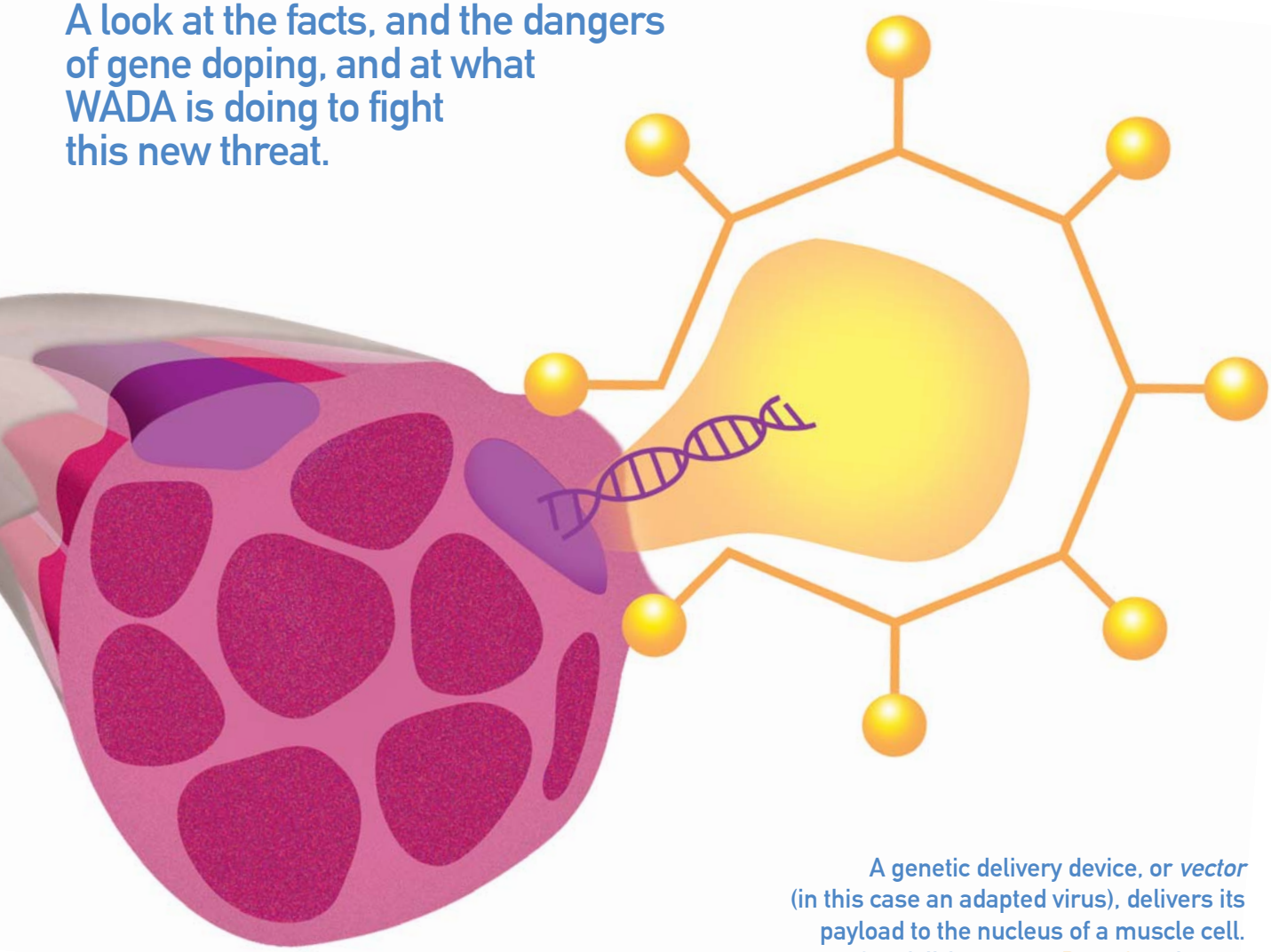
Gene Doping

Science and sport converge once again as medical research charts the complexities of genetic treatment. A look at the facts, and the dangers of gene doping, and at what WADA is doing to fight this new threat.



A genetic delivery device, or *vector* (in this case an adapted virus), delivers its payload to the nucleus of a muscle cell.
See full feature on Page 2 and more detailed explanation on Page 5

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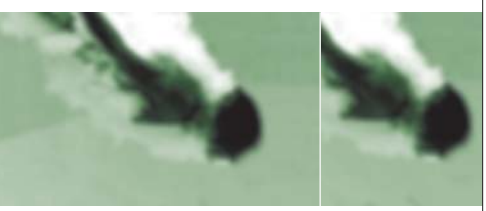

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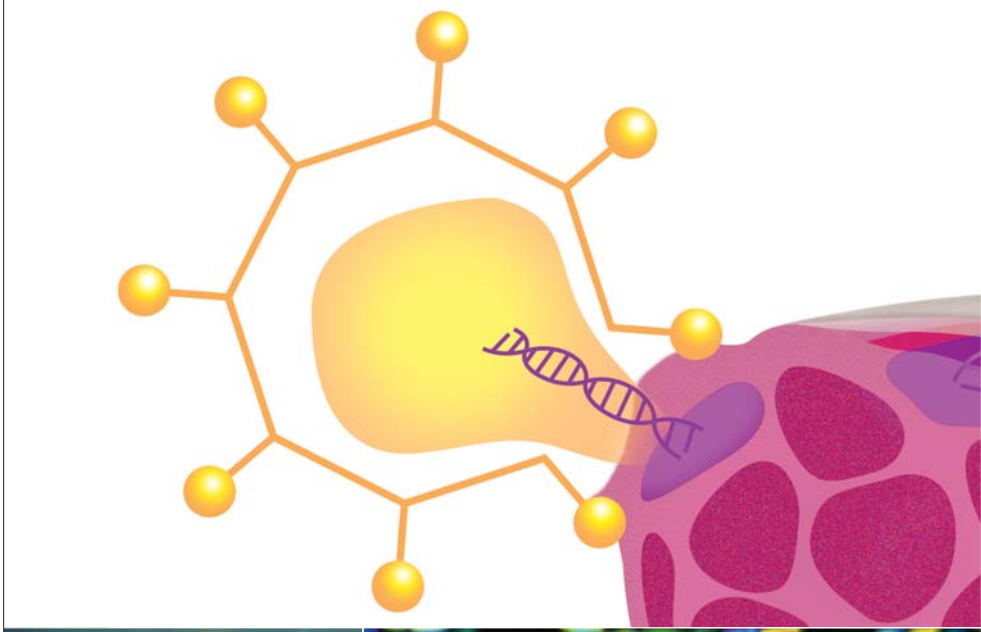

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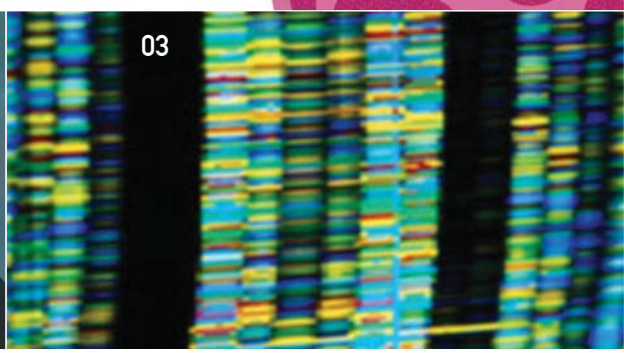

03

01

R.W. Pound Editorial:
Taking the Lead

Gene doping may represent a new frontier in athletic performance enhancement, but WADA is working hard to ensure that these emerging medical techniques are not used to create super athletes.

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02-03-04

Cover Story and Special Feature: Gene Doping

A review of where gene therapy stands, the possibilities it provides for performance enhancement, and what WADA is doing to keep gene doping out of sport.

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Gene Doping Projects Funded by WADA

Summaries of research projects now being funded by WADA into gene doping and its detection.

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Interview: Dr. Theodore Friedmann

The Professor of pediatrics and director of the gene therapy program at the University of California, San Diego, on the current gene therapy environment and the challenges that lay ahead.

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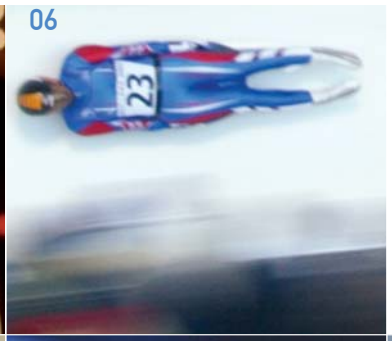


01

Taking the Lead

Gene therapy represents an exciting and promising step forward in medical research, but its use to enhance athletic ability is as wrong as any type of traditional doping.

As the Olympic Games in Athens wrapped up last summer, I was frequently asked one question by journalists who were already thinking ahead to the Beijing Games: Could there be genetic doping by 2008?

The idea that genetically-altered athletes could be competing at the Olympics in Beijing is disturbing but not out of the realm of possibility. WADA has, for some time, considered genetic doping to be a looming threat. We have taken the lead in focusing the attention of the scientific and sport communities on the challenge this new method presents for enhancing performance. As you will read in the following pages, our scientists do not believe that genetic doping is a reality – yet. But that could very well change in the next few years and we have to be ready with new weapons in our arsenal to deal directly with this new threat.

In 2002, WADA brought together, for the first time, leaders in sport and in science to discuss the issue of gene doping at the Banbury Conference in New York. The conference was exactly what we needed to place gene doping on the map for those who could do something to prevent it before it ever gets off the ground. Those involved in sport learned just how far science has come in the field of gene therapy. Cures for many devastating diseases now sit tantalizingly within our reach. The scientists learned just how far some athletes will go to be the best. They heard directly from some of their colleagues who had already had calls from coaches and trainers, asking how gene therapy could be applied to their athletes solely to enhance performance.

It was an eye-opening event for all of us and led to the inclusion of gene doping as a prohibited method on the 2003 Prohibited List of Substances and Methods. Since that time, we have done quite a bit to get ahead of the cheaters in this field. We have partnered up with some of the best scientists in the world to fund research projects into how gene doping can ultimately be detected. We have created a gene doping panel, whose members will continually advise us on cutting edge technology in gene-doping detection. And we have undertaken education efforts to let athletes and their entourages know that gene doping is still an imperfect science and quite dangerous. In addition to being as morally wrong as traditional doping, gene doping can present a significant risk to health.

Last winter, I spoke to the annual meeting of the American Association for the Advancement of Science on this topic. One point I stressed to them is the need for governments and regulatory bodies to create a framework for regulating the application of gene transfer technology. Some of that is already in place. In the U.S., for example, there are stringent rules regarding oversight of gene transfer studies. But there is still much that needs to be done in this area. Some disreputable labs would be willing to replicate the technology for performance enhancement – for the right price. As dangerous and wrong as traditional doping is, it is hard to conceive what the consequences could be of altering a person's genetic makeup just to make them better in sports. This is a slippery slope we do not ever want to go down.

We should all keep in mind one important point: gene therapy is an incredible step forward in the field of medicine and a testament to human ingenuity and ability. The fact that science now allows us to tinker with our genetic codes in order to be healthier human beings is a remarkable achievement. While we have a long way to go, I am confident science will get us to the point where gene transfer technology can be applied safely and effectively. But to misuse this advancement to create super athletes is not acceptable. WADA will fight gene doping as vigorously as it has traditional doping. Competitions should still be won through hard work, training, and dedication.

As dangerous and wrong as traditional doping is, it is hard to conceive what the consequences could be of altering a person's genetic makeup just to make them better in sports. This is a slippery slope we do not ever want to go down.

Gene Doping

Gene therapy for a number of diseases may be just around the corner, but those who would seek to use these advances for athletic gain should take note: the science of detecting gene doping is rapidly advancing to meet this new challenge.

Imagine a day when we will no longer worry about Parkinson's Disease. Or cystic fibrosis. Or some cancers.

There may come a day, in the not too distant future, when diseases such as these and others that have plagued mankind become a distant memory, thanks to research into genetics. Gene therapy – the ability to manipulate the human genome to prevent or cure diseases – is still a highly experimental procedure performed by very few research and clinical centers. Science has not advanced to the point where we can go to the doctor's office, get a shot, and be cured of an assortment of ailments caused by defects or mistakes in our genetic code.

But soon, we may be able to do just that.

Unfortunately, advancements in this field of science also may someday be used by athletes to try to better their performance on the playing field. For some, the lure of becoming better, stronger and faster than their competitors through tinkering with their genes may be too strong a temptation to resist.

"Most doping is the misuse and abuse of medicines normally used for therapeutic purposes," said Dr. Olivier Rabin, WADA's science director. "Many of the substances used for doping actually represent great steps forward in the fields of science and medicine. But they are being wrongly used to enhance athletic performance. The same may become true of gene doping."

While it is doubtful that gene doping is already a reality, WADA and its partners in the fight against doping have already made it a top research priority. In 2003, the Prohibited List of Substances and Methods was amended to include gene doping as a prohibited method. WADA brought together experts in the field of genetics, as well as representatives from the sporting world, in 2002 to look at the problem. And the Agency continues to take a leading role in the fight against gene doping by forming a panel of experts to continuously advise the agency on the most recent progress in this area.

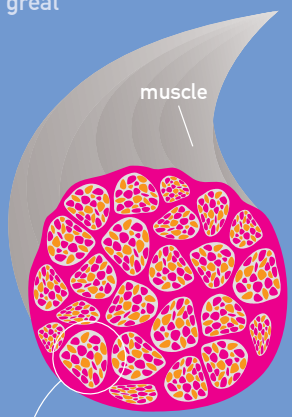
"We know the threat of gene doping is very real," said Richard W. Pound, WADA's president. "We need to start fighting this threat now, before it becomes a reality. It is easier to prevent a problem than it is to solve it."

Anatomy of a muscle

The cells that make up our muscles are unlike most found in the body. To understand how gene doping may one day affect the human musculature, it is useful to first understand how our muscles are made and how they work.

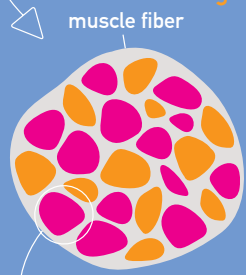
From the outside moving in, our muscles begin as great bundles of fibers that either contract or relax depending on what we ask of them (Fig. 1).

Fig. 1



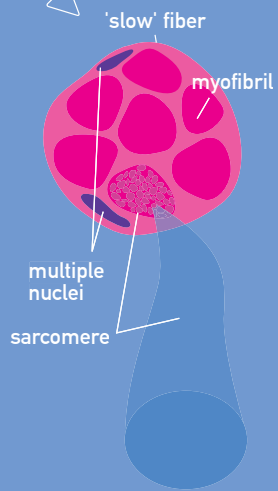
Each bundle of muscle fibers is itself a similarly formed aggregate of either **slow** or **fast** fibers (Fig. 2). Slow fibers help muscles when they want to burn energy less rapidly and increase endurance. Fast fibers help with quick bursts of explosive strength.

Fig. 2



Moving in to examine the structure of a 'slow' fiber or cell (Fig. 3), we find that it too is made up of bundles called **myofibrils**, as well as the cell nucleus.

Fig. 3



The myofibrils are made up of smaller units called sarcomeres (right), which perform the contractions that stimulate overall muscle movement.

What is gene therapy?

To understand what gene doping is, one must first understand the concept of gene therapy. Most of what we are, from the way we look, to how good we are in athletics, to what diseases we might one day develop, comes to a certain degree from our genes. Some of our traits are predominantly determined by our genes with a minor contribution from our environment. For other traits, the environment plays a bigger part. Usually, the two work in tandem to make us who we are. In 1990, the U.S. Department of Energy and National Institutes of Health began the Human Genome Project, a 13-year effort to identify all of the approximately 20,000 to 25,000 genes in human DNA.

Genes are composed of segments of our DNA and can best be thought of as the instruction sheet for what the genes ultimately produce– proteins. These proteins build our cells and instruct them how to function.

But what happens if a particular gene is defective and not working properly? What if the gene is missing or is mutated through inheritance from our parents, by exposure to chemical products or to radiation? When the gene cannot carry out its proper function to regulate the production of certain proteins, disease can result. For example, muscular dystrophy, a disease that causes progressive wasting of the muscles in the body, is a genetic disorder. The genes that create proteins for the growth and function of muscles are missing or defective.

One day, gene therapy may eliminate diseases such as muscular dystrophy. Scientists are studying various ways in which gene therapy can work. In some cases, a normal gene may be inserted into cells of patients or directly into the patient's genome to replace or repair a gene that does not work properly. In cases where a new, normal gene is inserted, scientists must use a gene transport method, known as a vector, to deliver the gene into the genome. The most common way to get the gene into the body is to use a disabled virus that has been altered to not be harmful in itself but simply to act as a moving van to deliver normal DNA to the cell.

"The viruses are like Trojan horses," said Dr. Theodore Friedmann, director of the Gene Therapy Program at the University of California San Diego and chair of WADA's gene doping panel. "The virus carries the genes into the targeted cells and unloads the normal genes, which can then begin to function and produce the necessary proteins and enzymes."

While the process sounds fairly straightforward, it has proven extremely difficult, with no real evidence of therapeutic effect in many hundreds of attempts. However there has been a notable recent success. In France, scientists have carried out gene transfers on several children who suffer from severe combined immune deficiency (SCID), or "Bubble Boy Disease." These children have a single malfunctioning gene that produces non-functioning form of a critical protein involved in the creation of a normal immune system. They must, therefore, live in isolation to protect them from the outside world. When treated with a virus vector carrying the normal copy of the gene, their bodies were able to produce the necessary protein to create a normal immune system. Unfortunately, three of the children treated later developed leukemia (see article by Dr. Thomas Murray, pages 9-12).

The realities of gene doping

In gene doping, an athlete would not be suffering from any disease. Instead, normal genes would be injected into the body to increase the

function of a normal cell. Scientists, including Dr. Lee Sweeney, have experimented with genes that produce insulin-growth factor 1 (IGF-1), which helps muscles grow and repair themselves. The genes, carried into the body by a harmless virus, produce more IGF-1 than the body would normally produce, stimulating muscle growth.

Friedmann envisions a scenario in which some athletes with injuries in a particular part of the body could use IGF-1 to speed healing and repair of the damaged muscles. Others might use gene doping to strengthen, for instance, a weakened knee or other damaged joint or injured tissue, which would give them a significant advantage on the playing field.

For athletes who use erythropoietin, or EPO, to enhance performance, gene doping would represent the next step. Instead of injecting themselves with the EPO itself, they would inject with the gene that produces the EPO, allowing the body to naturally produce more red blood cells.

The dangers of gene doping

Of course, gene therapy is not quite as easy as it seems on paper.

"Gene therapy is far from being mastered," Rabin said. "The chances of success are very low and the risks are still very high."

Indeed, gene therapy can be quite dangerous (see interview with Friedmann, page 7). It is therefore strictly regulated in the United States and now in other countries in which these kinds of experimental clinical studies are being carried out – England, Germany, France, Italy, Sweden, Japan, China, Australia and others. In the U.S., all gene transfer studies in humans must be approved at the local level by hospitals and institutional committees, as well as at the national level by the Food and Drug Administration (FDA) and, in most cases, also by the Recombinant DNA Advisory Committee (RAC) of the National Institutes of Health, which Friedmann has chaired.

Nevertheless, most experts predict that rogue labs will pop up, in the U.S. and elsewhere around the world, which would be willing to make experimental gene doping, no matter how dangerous, available to athletes for the right price.

What WADA is doing

WADA became involved in the fight against genetic doping in 2002. The Agency convened a two-and-a-half day conference called "Genetic Enhancement of Athletic Performance" at the Banbury Center on Long Island. The Banbury Conference, as it came to be known, was the first time experts from both the scientific and athletic worlds came together to tackle this issue (see Friedmann interview, page 7).

Conference participants issued a series of conclusions, including a call for the inclusion of gene doping on the Prohibited List, which occurred a year later. They also called for governments to "expedite the development of a global social framework for the application of genetic transfer technologies that address the potential misuse of these technologies in sport and a publicly stated deadline for the adoption of that framework."

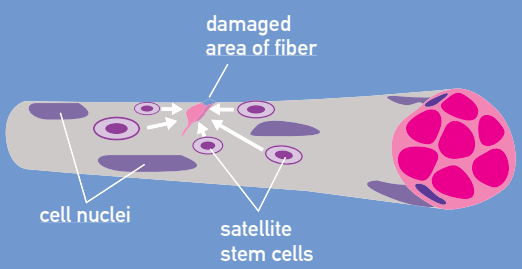
At that conference, WADA also pledged to devote more resources to research projects dedicated to gene doping. To that end, WADA is now sponsoring five distinct projects on how best to detect gene doping. (See table on page 6).

Enhancing with genes

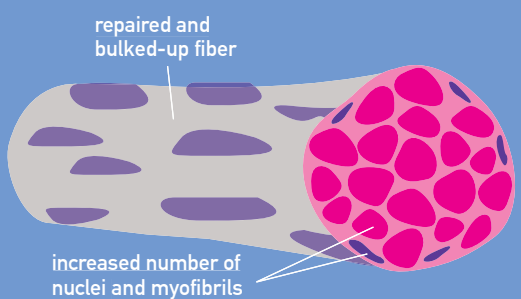
Genes can theoretically be used to build muscles, alter and adjust muscle composition, or boost endurance levels. Simulating injury (see explanation below), energizing dormant genes, inhibiting specific proteins, or adding new genetic material are all possible methods that may one day be used to achieve these medical procedures.

Normal muscle growth due to repair

Small microscopic injuries caused by exercise and training are thought to provide the signal for satellite cell division and growth, but other factors may also be at work.



Under normal circumstances a localized 'factory' of a protein known as **IGF-1** causes growth and hypertrophy of the muscle, at least partly by causing nearby satellite cells to divide, grow and fuse with existing cells. This process leaves the repaired cell with more nuclei and myofibrils - thus bigger than before the injury. A protein called **myostatin** is one of several that can tell the satellite cells when to stop.



Mimicking injury with genes

One method of enhancing muscle fiber size through gene therapy could possibly involve introducing an IGF-I gene with a **vector (see page 5)** to increase stem cell attraction and proliferation, or else by bringing in a gene for a protein to inhibit myostatin.

Can it be Detected?

Many athletes and their entourages may have a false sense of security about whether gene doping can be detected. After all, when a gene is inserted into the body, it becomes part of the genome. How can you tell if a gene is new or if it has always been there?

"Those who think they can cheat using gene transfer technology will be in for a rude surprise," said David Howman, WADA's director general. "It is a priority for WADA and for our partners to make sure gene doping is as detectable as any form of traditional doping."

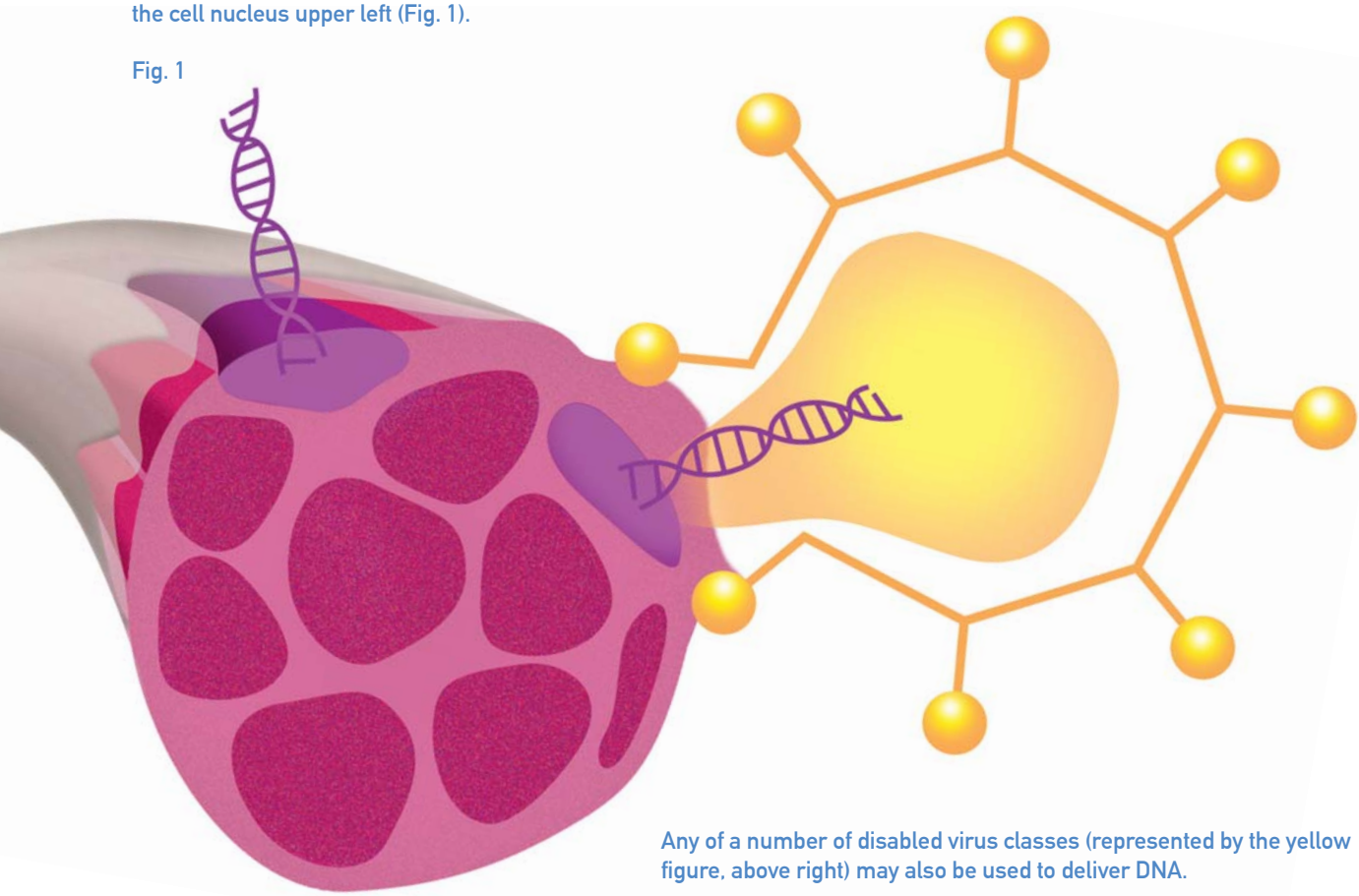
The projects WADA is funding in this field give a good indication of the type of methods researchers are examining for the detection of gene doping. It might be difficult to see that a particular gene has been added to the body, but there will be consequences to that addition that can be seen and measured. For example, the gene will express itself and produce more of a particular protein or enzyme, which can be detected and measured just as in the case of drug-based doping. The effects of that new and foreign substance will have an effect on the body that also can be detected. For example, there could be increased production of red blood cells.

Special delivery

Researchers have coined the term 'vector' to refer to any of a number of possible systems for delivering genes to target cells.

In one example in the illustration below, a packet of free DNA that might have been injected directly is represented as a bare double-helix entering the cell nucleus upper left (Fig. 1).

Fig. 1



Any of a number of disabled virus classes (represented by the yellow figure, above right) may also be used to deliver DNA.

Researchers will strip the harmful genetic material in the virus and then replace it with the helpful DNA that they wish to introduce into the target cell. The virus then simply does what nature designed it to do: penetrates the cell and delivers its genetic payload.

Furthermore, the addition of a new gene can have an effect on a number of other genes, causing them to "turn on" or "turn off," creating specific genomic, proteomic or metabonomic signatures that could also be detected. This method of detection would be similar to how astronomers find new planets: they cannot see the planet but know that it is there by observing the effect its gravitation has on nearby objects that are visible.

Researchers are looking at ways in which these changes to the genome can be detected through blood testing. Another unique idea being looked at is imaging, where a process similar to magnetic resonance imaging would be used to scan the body and search for unusual locations of gene expression.

Bottom line? Detection is possible and probable.

"I would like to send a shot across the bow of those who think we will not be able to detect gene doping," Friedmann said. "My advice to them is: don't be so sure—this is a very dangerous road to proceed on, and we will be ready to halt the traffic."

GENE DOPING PROJECTS FUNDED BY WADA AS OF JANUARY 2005

Investigator	Project	Location	Started	Short summary
Dr. Geoffrey Goldspink	Manipulation of muscle mass via the growth hormone (GH)/insulin-like growth factor (IGF-1) axis	Royal Free and University College Medical School University College London, UK	2002	Both GH and IGF-1 are human peptides involved in muscle growth. These factors are naturally upregulated during athletic training. Therefore, the distinction between endogenous and exogenously administered GH and IGF-1 is difficult. It has been shown that intake of GH, but not exercise, modifies the expression of a muscle-specific variant of IGF-1. This property is being used to design a test allowing the ability to distinguish between the introduced and the endogenous substances.
Dr. Günter Gmeiner	Application of microarray technology for the detection of changes in gene expression after doping with recombinant human growth hormone (hGH)	ARC Seibersdorf Research Seibersdorf, Austria	2004	Microarray technology will be used to search for changes in white blood cell gene expression following application of human growth hormone. Gene expression profiles of treated and untreated cells will be compared, with the objective of defining a set of genes modulated after hGH treatment.
Dr. Theodore Friedmann	Microarray detection methods for growth hormone and insulin-like IGF-1	University of California San Diego, CA, USA	2004	Administration of growth hormone and IGF-1 or of the genes expressing them will be associated with reproducible and detectable secondary changes in gene expression in many affected tissues, including peripheral blood. New methods for gene expression screening, such as global microarray techniques, will be used to detect such changes in cells from peripheral blood of mice exposed to GH and IGF-1 and to gene transfer vectors expressing them.
Dr. Jordi Segura	IMAGENE: non-invasive molecular imaging of gene expression useful for doping control: pilot study in animals after erythropoietin gene transfer	Pharmacology Research Unit Institut Municipal d'Investigació Mèdica (IMAS-IMIM) Barcelona, Spain	2005	An important field of application of imaging will be the prevention of the prohibited misuse of gene therapy in athletes. For this purpose, imaging will be used to detect the RNA being formed in unusual tissues after the gene transfer process. This approach is applicable to any gene transfected to tissues not usually expressing the "doping" protein, such as muscle for EPO. Imaging of mRNA will be carried out by the use of antisense peptide nucleic acids oligonucleotide probes labeled for tomographic detection. A pilot project will be carried out to image the presence of transfected EPO genes into muscle of mice.
Dr. Jane Roberts	The application of cellular chemistry and proteomic approaches to the detection of gene doping	HFL Laboratory Inc. Fordham, Cambridgeshire UK	2005	A different and more global approach for the detection of doping is proposed. Following doping with doping substances or the use of genetic manipulation, the expression of one or more genes and/or proteins will be altered in several accessible tissues, such as blood cells or bucal mucosa cells. These changes in gene/protein expression will be detected through the application of high performance transcriptomic or proteomic techniques. Ultimately, this will lead to the identification of abnormal RNA/protein patterns, representing molecular signatures associated to the use of doping substances, such as IGF-1 or growth hormone.

Dr. Theodore Friedmann, professor of pediatrics and the director of the gene therapy program at the University of California, San Diego, is a foremost expert in genetic research. He has worked with WADA on the issue of gene doping since shortly after the Agency's inception and was instrumental in organizing WADA's conference on gene doping at the Banbury Center in March of 2002. He is also the head of WADA's new panel on genetic doping. He shares some of his thoughts on gene therapy, why the Banbury Conference was so important, and whether gene doping is already a reality.

Interview: Dr. Theodore Friedmann

What were the concrete results from WADA's conference on gene doping in Banbury, Long Island, in 2002?

Before Banbury, there really wasn't much in the way of interest or publicity about the application of gene therapy in sport. What came out of Banbury was an awareness in both the athletic and scientific communities that there was a problem.

It was clear that the scientists were only marginally aware of what was happening in sport. At the same time, the sports world was hearing in the lay press about gene therapy and other advances in genetics but was not up to date on its true promise, problems and potential impact on sport. After this conference, the scientists became interested very quickly in the models of the application of gene therapy in sport.

And the athletic community took away a level of sophistication about the advances science was making in this field.

I think that the meeting was a kind of epiphany for most or all of the participants. The conference put a level of credibility and importance on the issue that wasn't there before. It was a very effective moment in the history of this issue.

How advanced is gene therapy? Is it already a reality in the medical world?

The technology is evolving very rapidly. The science is not all that difficult and can be reproduced by well-trained people in many thousands of laboratories all over the world. The research results in the field are rapidly and widely published in the open medical and scientific literature and therefore are available to any and all to learn. What is extremely difficult is to transfer the underlying basic scientific technology into human beings, whether they be sick people or athletes, and to do so safely and efficaciously.

For humans, gene therapy remains very immature, experimental and highly risky. In the United States, thousands of patients have been enrolled in clinical trials in the last decade and most of these studies have not shown any striking therapeutic benefit to patients. In fact, some serious adverse events, including death, have occurred. The bottom line is that everything gets complicated when you move from the laboratory into a human being. We don't have the technology yet in hand to ensure a predictable and adequate level of safety to feel comfortable using gene transfer technology in anyone other than in a patient with a serious or untreatable disease.

Such a use would be frivolous, dangerous and, in my mind, would constitute medical malpractice or professional misconduct.

Do you believe gene doping is already a reality?

The simple answer is that we don't know. We have no proof that it has happened yet, but we think it is likely to happen. Gene doping won't replace traditional drug doping because gene-based approaches will be more difficult. But as the technology advances, there will be those with means and motivation who will be willing to try.

The frightening thing is that rogue, unregulated laboratories will not be concerned about safety and will not be concerned about informed consent from athletes.

Can gene doping really be detected?

I think there is a very good chance that scientists will discover techniques for detecting gene doping. There are many avenues of research to pursue. Those who will try it, thinking it is undetectable, will be in for quite a surprise.

WADA's new gene doping panel, from left to right: Dr. Alain Garnier, WADA medical director, Professor Odile Cohen-Haguenauer, Dr. Lee Sweeney, Dr. Theodore Friedmann, Dr. Ann-Muriel Steff, WADA manager for scientific research, Dr. Kurt Zinn, and WADA science director Dr. Olivier Rabin. Not pictured: Professor Doug Wallace.

WADA Forms Gene Doping Panel

WADA is using all resources at its disposal to battle gene doping, and that includes bringing together some of the top scientists in the field for advice.

Late last year, the Agency formed a gene doping panel, which is composed of five of the top researchers in various fields of genetics. The panel is headed by Dr. Theodore Friedmann, from the University of California at San Diego, and includes other experts in the fields of energy utilization and imaging: Professor Odile Cohen-Haguenauer, of the Laboratoire de biotechnologies et pharmacologie génétique appliquée de l'École normale supérieure de Cachan, France; Professor Lee Sweeney, of the physiology department of the University of Pennsylvania, United States; Professor Douglas Wallace, of the evolutionary biology department of the University of California at Irvine, United States; and Dr. Kurt Zinn, of the molecular imagery department of the University of Alabama at Birmingham, United States.

Panel members will advise WADA's Health, Medical and Research Committee on gene-based doping to ensure the Agency has the latest information on advances in this field. The panel will also encourage promising research in the field of detecting gene doping.

"The gene doping panel is meant to expand the horizons of WADA," Friedmann said. "It's a way of bringing attention to new concerns in this field and new areas of expertise. This is something no one person can do alone."

The panel met for the first time in February at WADA's headquarters in Montreal.

06

Gene Doping and

Article contributor Thomas H. Murray is an expert in bioethics and the President of The Hastings Center (www.thehastingscenter.org). He also chairs WADA's Ethical Issues Review Panel.

Will the Olympic Games soon be dominated by genetically transformed athletes? With all the recent attention to genetically manipulated animals, one could be forgiven for thinking that the future of sport will belong to genetic engineers and their human guinea pigs. But the reality does not yet match the hype.

H. Lee Sweeney, a scientist at the University of Pennsylvania and a member of WADA's Gene Doping Panel, has indeed created genetically modified mice and rats with larger and stronger muscles than their unmanipulated peers. How soon will the Olympic movement have to worry about human analogs of these unnaturally muscular rodents? How soon will gene "doping" have a discernible impact on athletes' abilities to run faster, leap higher, or throw farther? The hoopla over genetically supercharged mice and rats worries—or excites—many people over the prospect that genetically enhanced human athletes will soon be here. For people who care about the meaning and integrity of sport and about fair competition, there is no time to lose in responding to the challenge of gene doping.

But we do have time.

A sober and realistic assessment is needed to shoulder aside the sensation-mongering that has dominated public discussion of gene

Olympic Sport

doping. One question helps to throw the cold water of reality on over-heated speculations about genetically enhanced humans: For how many human diseases has gene transfer—the scientific term for inserting new genes into cells, such as with Sweeney's mice—been clearly demonstrated to be an effective therapy?

The answer is, one—a very rare inherited disorder known as X-linked Severe Combined Immune Deficiency or X-SCID for short. It is "X-linked" because the disease is caused by an abnormal gene on the X chromosome. Similar to what happens in hemophilia, girls inherit two copies of the X chromosome. A normal copy of the gene on one X chromosome compensates for the unhealthy one, so female children escape the ravages of the disease. Boys, however, get only one X chromosome to pair with their Y, or male, chromosome. If their only copy of the gene is defective, their ability to fight off infection is severely compromised. Clinically, having X-SCID is like being born with an untreatable case of AIDS. These children have to be protected against even the mildest infection or they will die.

Researchers found the gene responsible and devised a way to insert healthy copies of it into the genome of these children's blood-producing cells. In a clinical trial conducted in France, eleven boys received the experimental gene therapy. The initial news was wonderful: most of the boys treated were able to make enough of the missing protein for their immune systems to function for the first time. As we have subsequently learned, while the gene transfer was effective, it was far from safe.

When the first boy developed leukemia, knowledgeable scientists treated it as an instance of colossally bad luck. Picture gene transfer in this admittedly crude way: Imagine millions of targets (human cells), each with its genome, like thin spaghetti tangled inside it. Then imagine blasting away at these targets with a shotgun. Most of the pellets pass harmlessly through. Some targets are obliterated. In other instances, though, a few pellets lodge in one of the spaghetti strands, but not enough to destroy the cell's ability to function. The new genes become integrated into the genome of that cell. The first boy's misfortune occurred because in one of those cell-targets, a gene-pellet came to rest in a sensitive spot close to another gene. That other gene began to function incorrectly, causing the disease known as leukemia.

"DOING GENE TRANSFER IS NOT LIKE TOSSING A BEAN INTO A BEANBAG WITH PREDICTABLE EFFECTS. OUR GENOMES ARE MORE LIKE INTRICATE ECOSYSTEMS, WITH COMPLEX INTERACTIONS AND FEEDBACK LOOPS INVOLVING THE GENES THEMSELVES AND THE INTERNAL AND EXTERNAL ENVIRONMENTS."

Scientists knew that the methods of gene transfer—so technically sophisticated and yet at the same time so imprecise—could result in a cell going haywire. But most likely the cell would simply die, or cease to function. In this unfortunate boy, instead the cell became a kind of bully, proliferating faster than its peers and ultimately taking over – as cancerous cells do.

Several months later another of the eleven boys in the experiment also developed leukemia. What was almost universally regarded as an astonishing coincidence became instead an ominous pattern. In January 2005 the researchers announced yet a third case, similar to the first two. That same announcement included the news that one of the two boys diagnosed earlier had died; the other appears to be recovering.

Scientists have learned to get genes into a cell, and how to prompt them to produce the protein, enzyme or hormone the gene is programmed to make. But that is not enough. The newly-inserted gene has to make just enough of its product—not too little, not too much—and to make it at the right time, for it to be optimally effective. But the X-SCID experiment shows that where the gene lands in a cell's genome may be just as important to the health of the person undergoing gene transfer.

The more we learn about our genomes, the more complexities we uncover. The central dogma of 1960s molecular biology was: one gene, one protein. Now we know that in some cases an individual gene can make multiple proteins that can affect different parts of our physiology. Doing gene transfer is not like tossing a bean into a beanbag with predictable effects. Our genomes are more like intricate ecosystems, with complex interactions and feedback loops involving the genes themselves and the internal and external environments.

It is also worth remembering that while a mouse's lifespan is roughly two years, a human's can easily exceed eighty. A genetically engineered mouse might die of old age well before long-term complications of gene transfer emerge. A twenty-year-old athlete, on the other hand, can look forward to many decades of uncertainty during which unpredictable, possibly catastrophic, consequences might appear. Drugs are more or less rapidly metabolized and excreted from the body—although in some cases they can result in permanent changes. If new genes become stably integrated into the genomes of long-lived cells or cell lines, they can continue to exert a powerful influence on the person's health for a lifetime.

Although the technology of genetic manipulation has come a long way, it is still very early days with respect to our understanding of how to make it work—and not malfunction—in people. Sadly, the history of performance-enhancing technologies in sport suggests that these uncertainties and risks will not deter unscrupulous entrepreneurs—or desperate, gullible athletes. Coaches and trainers indifferent to the health of the athletes under their influence may collude with unethical scientists who have the skills, knowledge, and access to raw materials necessary to attempt genetic modification.

The renowned physicist Niels Bohr is credited with saying "Prediction is very difficult, especially about the future." How true. Nevertheless, I will offer a few educated guesses about what the next several years will offer for gene doping in sport:

- There will be people offering what they will claim is genetic enhancement to athletes.
- Some athletes will take them up on their offer.
- Rumors will fly around the world of Olympic sport about gene-doped super-athletes.
- Those rumors will be half-true: True about some athletes subjecting themselves to genetic manipulation; false about them becoming super-athletes. The rumors will grossly overestimate the effectiveness of gene doping and its impact on sport.
- Of the athletes who try gene doping, most will experience no performance boost beyond the placebo effect, while others will find their abilities diminished and possibly their health damaged. There is the possibility—exceedingly remote at this time—that some few athletes may experience a temporary increase in performance. But this is very, very unlikely to affect the competitive balance in Olympic sport—at least not for a good many years.

For those who love the Olympics and want to preserve its dignity and integrity, complacency is not an option. Gene doping is not an imminent threat to sport, but it has the potential to dramatically affect the Games many years hence unless steps are taken now.

Education is vital. Athletes and the people athletes rely on for advice need to understand the complexities and uncertainties around gene transfer—not least, our enormous ignorance about the risks of gene transfer in humans, risks that the X-SCID experiment demonstrates can be unexpected and grave.

Research is also crucial. We need to devise strategies to deter and detect gene doping. We also must refine our understanding of the ethics of genetic enhancement. Does gene-doping challenge our conception of *natural talents*? In what ways is it similar to or different from using performance-enhancing drugs?

Meanwhile, if you find someone hyperventilating about the Olympics being on the verge of ruin because of gene transfer, encourage the person to take a deep, slow breath, and then set about the work necessary to insure that what you love and value about Olympic competition is preserved.

Newly-elected WADA VP Brian Mikkelsen (above and with Richard Pound bottom-left) hosting the World Conference on Doping in Sport in Copenhagen in 2003.

A Vice President for WADA

Brian Mikkelsen, the Danish Minister for Sport, newly elected as WADA vice president by the Foundation Board

For the first time since the Agency's inception, WADA has a vice president. At its November 2004 meeting, the Foundation Board unanimously elected Brian Mikkelsen, the Danish Minister for Sport, to this position. Since that time, Mikkelsen has been working closely with WADA President Richard Pound and Director General David Howman.

Mikkelsen is no stranger to WADA. In fact, he was responsible for hosting the 2003 World Conference on Doping in Sport in Copenhagen, where the World Anti-Doping Code was unanimously approved. He has also served Europe on WADA's Executive Committee since 2002 and has been working hard on placing the fight against doping on the European Union agenda.

Mikkelsen, who holds a Masters degree in political science, was elected to the Danish Parliament as a representative of the Conservative People's Party at only age 28. He became Minister of Culture in November 2001 and was reappointed following the February 2005 Danish election.

Since responsibility for sport falls under the cultural minister, Mikkelsen also holds the title of Minister of Sport, a topic for which he has a great passion. Despite a busy schedule, he finds time each morning to jog, likes to play tennis and attends sporting events as often as possible. Mikkelsen has been elected WADA's vice president for a period of one year.

"WADA is built upon a partnership between the Olympic Movement and governments of the world," Mikkelsen said. "This partnership is reflected in all the work the Agency carries out and it is now evident in WADA's leadership, as well."

Pound, who was re-elected to a three-year term, is pleased to have Mikkelsen on board.

"Denmark has always been a stalwart supporter of the anti-doping fight and Brian has shown his commitment to WADA many times," Pound said. "I am happy to be able to collaborate even more closely with him."

State of the Nations

Our continuing series on government representatives who are particularly active in the fight against doping in sport.

Jean-François Lamour (FRANCE)

Jean-François Lamour is a well known sports figure in France. A talented fencer, he has won two Olympic titles, in Los Angeles in 1984 and in Seoul in 1988, as well as three other Olympic medals and a world championship in 1987. He was the flag bearer for the French Olympic team in Barcelona in 1992 and retired from sports competition at the age of 36. He then took up again his trade of physiotherapist, which he put aside in 1993, when then Paris Mayor Jacques Chirac asked him to be his counselor on youth and sport. He held the same position at the national level from 1995 to 2002, when Chirac became president of the republic, before being named France's Minister for Sport.

Today, Lamour is one of Europe's most active ministers in the fight against doping in sport. He has helped coordinate this fight internationally for years and in 2004, became a member of WADA's Executive Committee. As Minister in France, he has prepared a law that will put French legislation completely in line with the International Convention Against Doping in Sport, being prepared under the auspices of UNESCO.

Under Lamour's guidance, France has intensified the fight against doping in many areas, including education, doping control tests and international cooperation in the area of substances trafficking. France also continues to make one of the largest contributions among governments to WADA's annual budget (approximately US$593,000 in 2004).

Humberto Rodriguez Gonzalez (CUBA)

Humberto Rodriguez Gonzalez holds a dual role in Cuba, as president of the Cuban National Insitute for Sport, Physical Education and Recreation and as president of his country's national anti-doping commission, which was created in 1999. In this role, he plays an important role in the fight against doping at both a national and international level.

Gonzalez, who holds a degree in law, was the chief of mission of his country's delegations to the Olympic Games in both Sydney and Athens and is quite familiar with the world of elite sport. His role with the anti-doping commission gives him responsibility for putting in place educational campaigns, warning athletes about the dangers of doping and putting in place various programs, in collaboration with the Cuban Olympic Committee, to ensure clean sport.

In recent years, Cuba has stepped up its efforts in the fight against doping, particularly since the opening of an accredited laboratory in Havana in 2001. In addition, more than 2000 doping controls will be carried out in Cuba this year as part of the anti-doping program and Cuban sports authorities continue to put in place various programs for educating athletes and their entourages.

Datuk Azalina Othman Said (MALAYSIA)

Datuk Azalina Othman Saidi is a pioneer. She is the first woman to serve as Minister for Youth and Sport in Malaysia and is also the first woman to serve the Asian region on WADA's Foundation Board.

A lawyer by trade, she has undertaken her role as minister with the same fervor that she used to create "Women, Sport and Health," an organization dedicated to promoting physical activity among women. She entered politics in 2000 and has served as minister since March 2004. She has launched a national campaign "Sport for All," and has created a council on physical activity, opened athletic centers to the public and has invited the Malaysian population to contact her directly with their thoughts and suggestions.

A fifth-dan black belt in taekwondo and a sport enthusiast, she is passionate about the concept of sport without doping and has put in place several measures in this regard. Her election to WADA's Foundation Board allows her to pursue more anti-doping activities in her country, which is one of two nations in Southeast Asia to have a WADA-accredited anti-doping laboratory.

A proven champion and certified lover of life on the edge, Jacqui Cooper has become one of Australia's most vocal advocates of how the greatest thrills come from an honest and dedicated pursuit of athletic excellence.

Jumpin' Jac

A freestyle aerialist has the agility of a gymnast, the courage of a skydiver, the creativity of a skateboarder and the skill of a professional skier. Aerialists fly down an icy mountain at high speeds, then launch off a man-made ramp with an upturned end (kicker) that shoots them 50 to 60 feet above the heads of spectators, where they twist, flip and turn in mid-air before landing.

This is Jacqui Cooper's sport of choice. It's a good thing she's afraid of virtually nothing.

Since her youth, Cooper has been known for trying stunts. When she was four years old, she climbed out the back window of the family car and onto the car roof. Her mother never noticed and Jacqui sat on the roof rack for almost two miles, as the car moved through traffic. It was only upon pulling into her garage that Cooper's mom realized where her daughter had been for most of the ride.

Cooper started freestyle-skiing when she was 16 years old. She was spotted by a ski coach who saw her doing flips and turns in the sand dunes in Australia.

He told her she would be good at freestyle and she took it from there.

Now 32, Cooper's career highlights include 15 career World Cup wins and 27 World Cup medals (15 gold, 8 silver and 3 bronze). Cooper was 1999 World Champion and she was World Cup Freestyle Overall Champion in 1999, 2000 and 2001. Cooper was the first woman in the world to compete Full Tuck Full (Complex double twisting somersault). She was also the first woman in the world to do a Full Full Full on snow and compete it (triple twisting triple somersault).

Cooper is one of several high-profile Olympians spearheading the "Live Clean, Play Clean" Drug Education Program, which is an initiative of the Australian Olympic Committee (AOC).

"I really believe that education is vital, and that education about drugs in sport is very important for individuals that compete in sport," Cooper said. "Being a role model brings certain responsibilities. I feel it is my responsibility to help inform and educate people about drugs in sport. Olympians can be a huge asset to these types of programs; they can raise the awareness of drug issues because Olympians have to deal with drugs in sport everyday."

This program targets young athletes involved in Olympic and non-Olympic sports throughout Australia. The program highlights the dangers of taking performance-enhancing drugs. It also deals with the use of food supplements, recreational drugs and explains in detail the penalties for any athlete who returns a positive test. The program travels to schools and sporting institutes throughout Australia. (For more information on the program see the spring 2003 issue of Play True.)

"I think all national federations (NFs) should run similar programs in line with the AOC "Live Clean, Play Clean" initiative," Cooper said. "I think that educating everyone (all young people) is an enormous job. All NFs need to be responsible for their athletes and an education program for drugs in sport should be out in place. Too many times people say that they weren't aware of the banned substances."

The program outlines the AOC's strict anti-doping policy, which all athletes must sign before they are accepted onto the Australian Olympic Team. Cooper's role as deputy chairperson on the AOC's Athletes Commission allows her to help formulate that policy. It stresses the need for all athletes to take full responsibility for what they take.

"Given the information out there, I don't think there is any excuse for what we take as athletes," she said. "Anything we put in our mouth is our responsibility. As long as the education is there for the younger and up-and-coming athletes, a lack of knowledge is not an excuse anymore."

When asked what she thinks of athletes who cheat and the adequacy of penalties in reference to cheaters Cooper said, "Athletes that cheat are really just cheating themselves. Winning is so important but it should be honest and it should be a display of a person's natural abilities, hard work and talent. I have no respect for athletes that cheat. I'd rather see a mediocre performance that wins, than an outstanding performance that only won because the performance was enhanced by drugs."

"I think WADA, the Australian Sports Drug Agency (ASDA) and the NFs are doing a great job targeting drug cheats," she added "The harshest penalty should be in place for people that cheat the system. Taking drugs is breaking the "sport" laws and punishment should be very tough."

Last year, Cooper made a successful return to aerial skiing competition at Mt Buller's Alpine Exposure World Aerials in September 2004, more than two and a half years after the injury that ended her gold medal campaign at the Salt Lake 2002 Olympic Games. She came back not only intent on re-joining the World Cup circuit and getting to the Olympic Games in Turin in 2006, but also on completely rebuilding her technique step by step, making sure fundamentals were bedded down in low degree of difficulty routines.

Cooper was still only part way through the process of re-building her routine, performing double somersaults rather than her trademark triples, but she executed them superbly, not only making the podium, but also qualifying for selection to the Australian team for the Turin Games.

When the 2004/05 World Cup circuit resumed in Mont Tremblant (Canada) in January, Cooper maintained her focus on rebuilding her technique, opting for a double twisting and single twisting double somersault routine. She placed sixth, but more importantly, she earned a perfect form score on her lay full from one of the judges, and was just 1.7 points off a perfect points score for the jump.

I really believe that education is vital, and that education about drugs in sport is very important for individuals that compete in sport. Being a role model brings certain responsibilities. I feel it is my responsibility to help inform and educate people about drugs in sport. Olympians can be a huge asset to these types of programs.

Cooper was 1999 World Champion and World Cup Freestyle Overall Champion in 1999, 2000 and 2001. Her career highlights include 15 career World Cup wins and 27 World Cup medals (15 gold, 8 silver and 3 bronze).

International Paralympic Committee

Ever vigilant in its stance against doping, the IPC's priorities remain focused on the education of athletes and the implementation of a comprehensive registered testing pool

By Miriam Wilkens, IPC Media and Communication Director

The International Paralympic Committee (IPC) is the international governing body of sport for athletes with a disability. The IPC supervises and co-ordinates the Paralympic Summer and Winter Games and also acts as the international federation (IF) for 13 sports. For these 13 IPC sports, the IPC supervises and co-ordinates multi-disability competitions, such as world and regional championships, and provides the administrative and policy development services, including in the area of anti-doping. The IPC also supports the recruitment and development of all athletes across all performance levels.

The IPC was founded in 1989 as an international non-profit organization and is formed and run by 161 National Paralympic Committees (NPCs) and four disability specific international sports federations. The IPC headquarters, situated in Bonn, Germany, includes approximately 20 professional staff, the first employed in 1998, who manage the daily operations of the organization. Previously, the organization was run almost exclusively by volunteers.

Andy Parkinson, who will be joined by an anti-doping and classification manager in the near future, currently heads the IPC medical and scientific department. The department manages anti-doping, classification and sport science issues and is supported by the Anti-Doping Committee and the Therapeutic Use Exemption (TUE) Committee. The Anti-Doping Committee supports test planning and manages results whereas the TUE Committee is responsible for the TUE process (applications, decisions, etc). International level athletes with specific medical conditions requiring medication that are prohibited may apply for TUE. The IPC works closely with WADA through its representation on the WADA Foundation Board (Phil Craven), Health, Medical and Research Committee (Dr. Björn Hedman), and the Education Working Group (Andy Parkinson).

The Code

In March 2003, the IPC became a signatory of the World Anti-Doping Code. Thereafter, the IPC Anti-Doping Code was revised to comply with the WADA Code and corresponding International Standards, and was officially launched on February 1, 2004. The IPC Anti-Doping Code is a unique code as it applies at all IPC sanctioned competitions, meaning at all 13 IPC sports' competitions (championships, cups, etc) and at Paralympic Games. This is in contrast to, for example, the IAAF Code, which only applies for one sport, namely athletics, or the IOC Code, which only applies at Olympic Games. The IPC was the second organisation, in its capacity as an IF, to release a WADA-compliant Code.
To protect the athletes' fundamental right to participate in doping-free sport, the IPC in mid-2003 ruled that all NPCs and sports wishing to take part in the Paralympics must declare their acceptance and recognition of the WADA Code. This obligation has now been expanded; today one requirement for IPC membership is to sign a declaration to abide by the WADA Code and to implement appropriate rules and regulations. It is believed that this is the strongest message that the IPC can send to its members signalling that doping will not be tolerated.

In-Competition Testing

The IPC negotiates the number of tests to be taken with each organizing committee of an IPC sanctioned competition. Generally, no less than 15 percent of the accredited athletes at world championships are tested and at regional championships and other sanctioned competitions, approximately 10 percent are tested. Last year, tests were carried out at a variety of world championships (eg, IPC 2004 Bowls World Championships), regional championships (eg, IPC 2004 Archery Asia & South Pacific Championships) and world cups (eg, IPC 2004 Nordic Skiing World Cup). The IPC plans to increase the number of competitions with in-competition testing significantly in 2005.

Paralympic Games

The Paralympic Games provide the IPC with the greatest single opportunity to test athletes across a wide variety of sports. A total of 680 urine tests, including EPO tests, were carried out at the Athens 2004 Paralympic Games. For the Turin 2006 Paralympic Winter Games, approximately 250 urine tests are planned including EPO, and blood tests for hGH and other substances.

Photo courtesy IPC

Out-of-Competition Testing

In 2004, the IPC signed an agreement with WADA on out-of-competition testing, ensuring that the 13 IPC sports are subject to out-of-competition testing; in the past, testing has only taken place at sanctioned competitions. WADA, in consultation with the IPC, manages the out-of-competition testing and sample analysis with national anti-doping organizations or third parties carrying out the testing on behalf of WADA. All athletes competing at an international level may be subject to out-of-competition testing. It is expected that the number of tests will increase in 2005.

Registered Testing Pool/ADAMS

Since 2004, the IPC has been working on refining the criteria for and management of the IPC's registered testing pool, which currently includes all athletes participating at Paralympic Games. Being the IF for 13 sports complicates the already hard-to-handle matter of athletes' whereabouts. At present, there is no internal solution for tracking athletes' whereabouts but it is hoped that the WADA Anti-Doping Administration and Management System (ADAMS), once implemented in mid 2005, will assist significantly in the IPC's ability to track athletes' whereabouts and implement an effective out-of-competition testing program. Together with other organizations, such as UK Sport and the International Rugby Board, the IPC is involved as part of the ADAMS implementation group to assist with the first phase of operations of ADAMS.
Another area, which ADAMS will hopefully simplify, is the TUE procedure. The IPC has had a TUE process in place since 1994 (formerly known as the Medications Advisory Panel) and the number of applications has, over the years, grown. In 2004, approximately 350 TUE applications were managed. While the number of applications is not expected to decrease, it is hoped that ADAMS will assist both athletes and the IPC in the TUE process, from application to approval, through an online solution.

Education

During 2005, another priority will be education. In the past, the WADA Athlete Outreach program has successfully assisted the IPC in educating athletes through its presence at the Salt Lake 2002 and the Athens 2004 Paralympic Games, and at the IPC 2004 Alpine Skiing World Championships. The Outreach program will also be present at the Turin 2006 Paralympic Winter Games and is a successful means of educating athletes. However, the IPC plans to implement greater initiatives for education and is presently developing web-based educational tools and investigating possibilities to develop an IPC Athlete Outreach program in line with WADA's strategy.

Contact

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WADA Funds available for Social Science Research

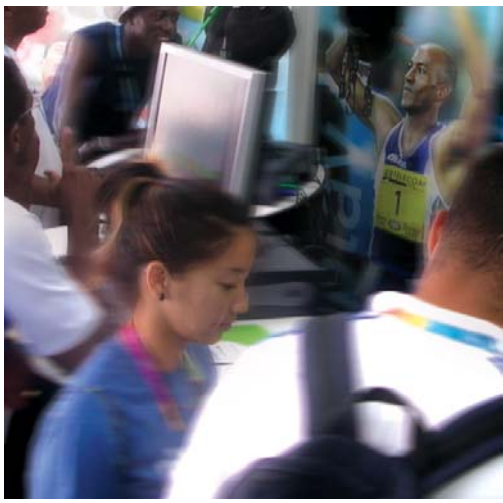
US $60,000 earmarked for 2005 pilot program

Anti-doping education remains a high priority for WADA. To this end, the Agency will award grants in the social sciences to encourage research in this area. The objective is to gain more information into the most effective way to put in place anti-doping education programs.

In the 2005 pilot program, US $60,000 in funds will be available as grants. Future funding of this program will depend largely on the interest shown by the research community in this field and by the quality of proposals submitted for grants this year.

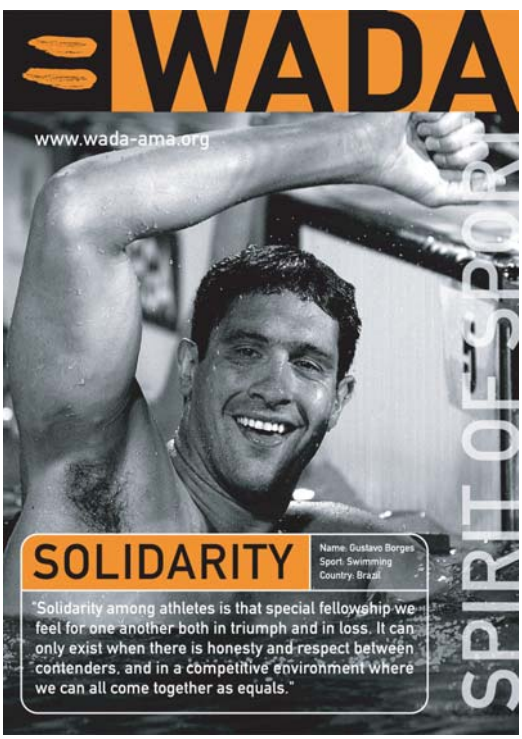
All proposed research projects must be related to one or more of the stated program priorities. Priorities will be assigned on an annual basis to certain topics, research subjects and protocols. More detailed information is available in the "Guidelines for Applicants 2005," which are available, along with the "Call for Proposals," on WADA's website under the education section.

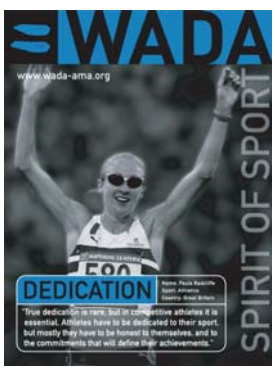
WADA will dispense research grants to all types of organizations (universities, small businesses, for-profit organizations, etc.) Deadline for submissions for consideration for the pilot program is March 31, 2005. Those interested in obtaining further information can contact: *info@wada-ama.org*

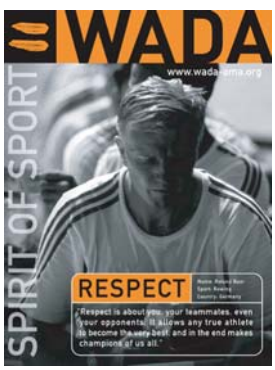


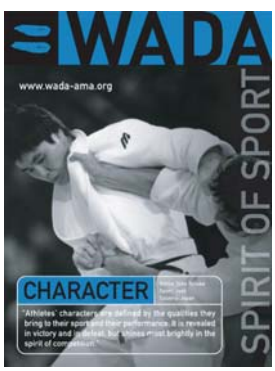
WADA Launches Poster Series

WADA has launched a poster series to promote the values of sport (respect, dedication, character, solidarity and excellence). The series - available for now only in English - is titled "Spirit of Sport" and features five athletes in the fight against doping: Canadian basketball player Tracey Ferguson; Brazilian swimmer Gustavo Borges; Japanese judo competitor Yoko Tanabe; German rower Roland Baar; and English runner Paula Radcliffe. Interested stakeholders can contact WADA at *info@wada-ama.org*









Education Symposium held in Uruguay

WADA has launched its education symposia program February 22 and 23 in Montevideo, Uruguay. The symposium brought together approximately 50 participants, including representatives from the sporting world, anti-doping agencies, athletes, trainers and other interested parties from Latin America.

WADA was represented by Director General David Howman and others at the event in Uruguay. The Agency has developed this symposia program with a particular focus on developing countries and regions worldwide. The program has a fundamental objective of assisting WADA's stakeholders in implementing effective education programs and ensuring the provision of relevant information on doping-free sport, with particular emphasis on athletes and their support personnel.

More educational symposia will be organized in other regions of the world in the coming months.

2005 Prohibited List and Third Edition Athlete's Guide now available in print

WADA's 2005 List of Prohibited Substances and Methods, which went into effect January 1, is now available in print form in English and French.

The Agency has also published a third edition of the Athlete's Guide, which gives an over view of the World Anti-Doping Code and describes athletes' rights and responsibilities in the doping control process.

These two publications can be found on WADA's website at: *www.wada-ama.org*

International Convention Reaches New Stage

The UNESCO Headquarters in Paris. The objective remains to have the convention ratified prior to the Turin Games in February of next year.

Draft final text sent to member states, will be presented to UNESCO General Conference in October

The International Convention Against Doping in Sport, being prepared under the auspices of UNESCO, the United Nations body for education, science and culture, reached an important milestone in January.

The final text of the document was drafted during a Category II meeting of UNESCO member countries in Paris. WADA representatives, including Director General David Howman, participated in the meeting.

This draft final text was sent in early March by UNESCO Director General Koïchiro Matsuura to all member states and will be presented to the UNESCO General Conference during its session, which will take place October 3 to 21 in Paris.

The objective remains to have the convention ratified by governments and the World Anti-Doping Code thus formally recognized by them prior to the Olympic Games in Turin in February 2006.

NEW ARRIVALS

WADA has new Communications Director

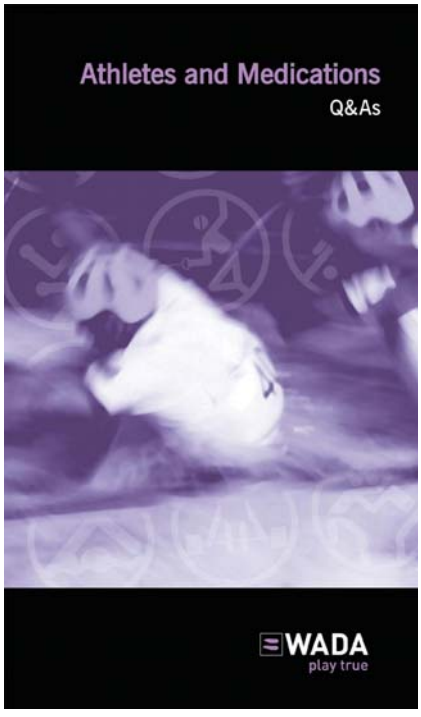
WADA has hired Elizabeth Hunter as its new director of communications. Hunter was senior director of communications and member services, Federation Relations, for the United States Chamber of Commerce, the world's largest business federation. In that capacity, she was responsible for the organization's relationship with 3,000 state and local chambers and 800 business associations, garnering their support for U.S. Chamber legislative and regulatory priorities.

Elizabeth Hunter

From 1999 to 2001, she served as marketing director for the U.S. Chamber's joint venture ChamberBiz.com, a business-to-business web portal providing grassroots advocacy services and business information to the small business market. Prior to joining the U.S. Chamber, Hunter was the government affairs officer for a U.S. business association in the blood products and services industry. She has also worked as a legislative aid to a member of the United States Congress. She holds a master's degree in French from Middlebury College in Middlebury, Vermont. Hunter will start at WADA in early April.

In addition, WADA welcomes new legal manager Julien Sieveking, who previously worked for the European Football Union (UEFA) in Nyon, Switzerland. WADA's regional office in Lausanne has also grown with the addition of Nicole Frey, who assumes the role of medical coordinator. Frey will assist medical director Dr. Alain Garnier in the review of therapeutic use exemptions.

New booklet on Athletes and Medications now available



WADA has published a new question and answer booklet entitled *Athletes and Medications*.

The booklet, available in English, French and Spanish, gives athletes information on how to be cautious when taking medications in order to avoid a positive doping test.

This publication is the latest in a series produced by WADA in multiple languages. Other *Q & As* produced focus on the World Anti-Doping Code, therapeutic use exemptions (TUEs) and nutritional supplements. All of these publications can be found in PDF format on the Agency's website.

Funding

94 percent received for 2004, Oceania contribution paid in full for 2005

WADA has already received several contributions from the Olympic Movement and world governments to its budget beginning this year.

By the end of January, WADA had received 25.5 percent of its budget for 2005, US $3.7 million of which was an advance from the International Olympic Committee.

The Oceania region has paid in full for this year. WADA has also received contributions due from previous years, which brings the total received for 2004 to 94 percent.

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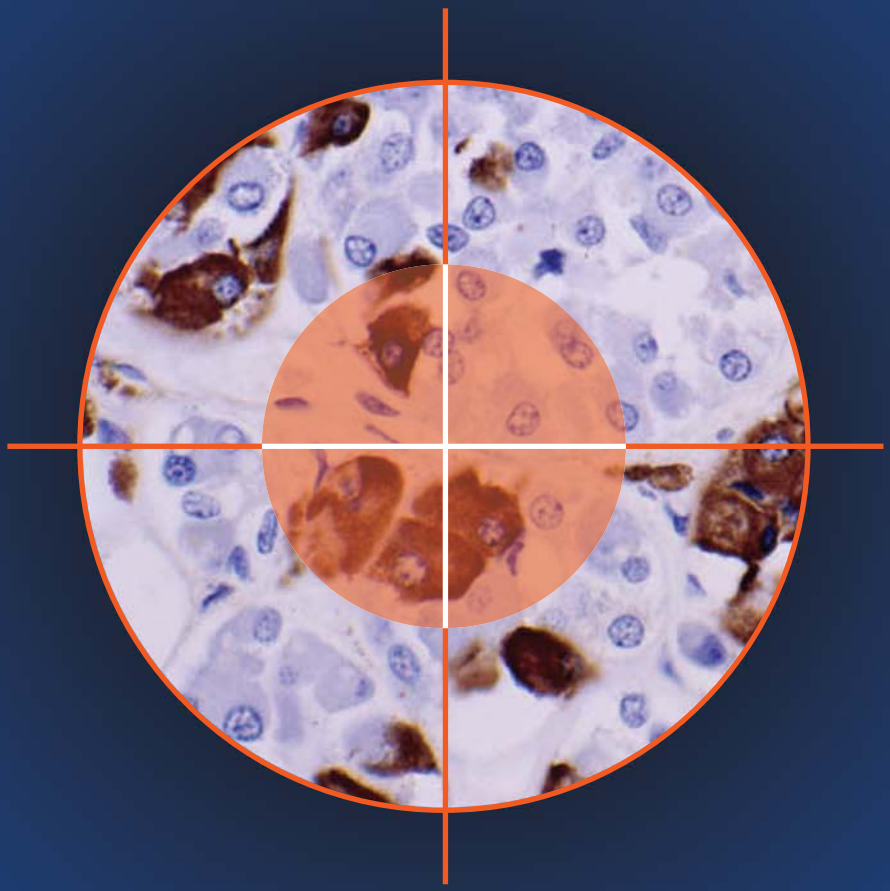
WADA



Science

Honing in on Doping

WADA's research budgets have created a stable and significantly increased source of funding for anti-doping scientists, accelerating the development of new detection approaches and putting dopers squarely in their sights.

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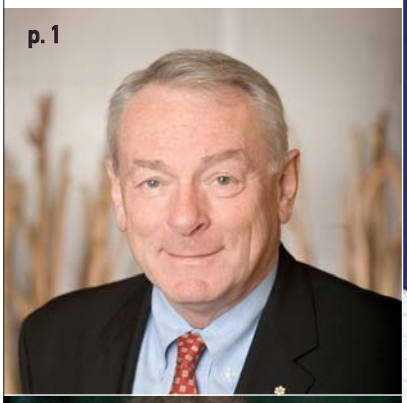

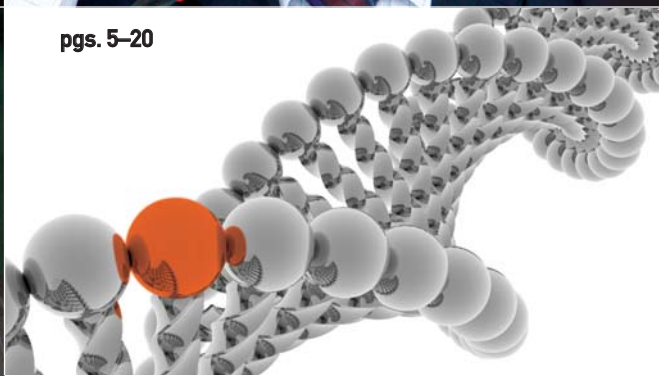

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Code Compliance: The Time Is Now

Code signatories take note: your Code compliance report card will be made public next year. If your sport or anti-doping organization is not yet Code compliant, now is the time to get your house in order.

The World Anti-Doping Code assigns WADA the responsibility of formally reporting on stakeholder compliance every two years. Our first report will occur in November 2008. In lead-up to this, WADA's Executive Committee has directed WADA to prepare a preliminary report for the September 2007 executive meeting, reporting on the status of each anti-doping organization (ADO) and International Federation (IF) vis-à-vis Code compliance.

We will report publicly on compliance by the end of 2008, and I encourage every one of your organizations to take a hard look at your rules and programs today and contact WADA should you have any questions or require assistance so that you are fully compliant and can be reported as such.

Let's first clear up any confusion that might exist about what exactly compliance entails. There are three "steps" to becoming compliant: acceptance, implementation and compliance. When an organization *accepts* the Code, it agrees to the principles of the Code and that it will use the Code as the basis for its anti-doping program, rules and regulations. Code acceptance is an important public statement, but it is only a first step that means very little without putting action to those words through implementation and compliance.

During the *implementation* phase, the organization undertakes a process of reviewing its policies and rules governing its activities and amending them to include the mandatory articles and principles of the Code and related International Standards. This involves attending to all aspects related to the fight against doping in sport including, but not limited to, ensuring that the rules for managing doping control results follows the universally accepted procedures, there is an appropriate mechanism in place for reviewing and granting therapeutic use exemptions, and, for IFs in particular, there is an out-of-competition testing program as defined by the Code.

Implementation is another important step, and is no minor task, but in the end amounts to little if there is not full compliance. An ADO or IF is Code-compliant only when its policies and rules are in line with the Code, and it is applying and enforcing them.

Given that the Code was approved in 2003 and that it came into force in January 2004, one might reasonably expect all ADOs and IFs to have achieved full Code compliance by now. Particularly since the Code, in its current form, is the result of extensive drafting and consultation with, as well as final approval from, all stakeholders including ADOs and IFs, a process which began as early as 2001.

Some have taken on the fight against doping in a very resolute manner. Because of their firm and decisive action in confronting doping, these ADOs and IFs stand a far greater chance in terms of safeguarding their sports' and anti-doping programs' integrity and credibility. And their athletes stand a far greater chance of experiencing the joy of fair and honest competition, without any clean athlete ever considering resorting to doping in order to "level the playing field."

Others, whose authorities systematically have turned a blind eye to doping over the years, now find themselves in desperate situations calling for extreme measures to salvage what good might possibly remain, as evidenced by recent headlines.

Between these two extremes, there are those stakeholders that have taken some measures and are compliant in some areas while not so in others.

Whatever the case may be, now is the time for all Code signatories to act, and WADA can help. We have programs and activities in place, operating on a daily basis, that are intended to assist stakeholders in meeting their Code requirements.

Progress Based on Research

I am pleased to provide a brief introduction to this issue of *Play True* in which we highlight some of the recent advances in the science of detection as a result of WADA's scientific research program. Common themes you will read about are the relative scarcity of funds for anti-doping research, the significant impact WADA's research program has made in spite of this and in a relatively short period of time, and the value of partnership and collaboration.

WADA's program was established in 2001, and has since devoted more than US$31 million to scientific research. This year we committed US$6.6 million to the program. For an international agency with an annual budget of approximately US$23 million, close to 30 percent of the total budget for scientific research is a significant commitment. It has been a worthwhile investment, resulting in our ability to detect a number of performance enhancing drugs, such as the designer steroid DMT and more recently hGH. Still, we know that more can be done and recognize the need to continue to cultivate champions, forge partnerships with our stakeholders and seek collaboration from outside the traditional anti-doping movement.

For this issue we interviewed several individuals who have indeed championed the need for a dedicated research program or who have contributed significantly to our ability to detect doping through their own research activities. I want to take this opportunity to recognize their invaluable work, without which there could be no legitimate fight against doping in sport. There are many others too who have dedicated themselves to scientific study in the field of anti-doping, or who have used their expertise in other highly specialized areas, to the service of the fight against doping in sport. WADA and its stakeholders are grateful for this work and for the partnerships created, which allow us to become more and more efficient at deterring and detecting doping.

For an international agency with an annual budget of approximately US$23 million, close to 30 percent of the total budget for scientific research is a significant commitment. It has been a worthwhile investment, resulting in our ability to detect a number of performance enhancing drugs, such as the designer steroid DMT and more recently hGH.

We review stakeholders' rules and provide models of best practice and guidelines to facilitate implementation. Model rules have been developed for IFs, National Federations, National Olympic Committees, National Anti-Doping Organizations and Major Games Organizers. Guidelines are available for, among other activities, result management, out-of-competition testing, whereabouts information, therapeutic use exemptions, blood and urine sample collection, and education programs.

In addition to the assistance in relation to rules and processes, we monitor sanctions, appealing decisions that are not in line with the Code. To help ensure there are Code-compliant anti-doping programs worldwide, we foster the establishment of Regional Anti-Doping Organizations (RADO), and so far have helped to bring more than 100 countries into the fold. We have proposed the development of an IF anti-doping organization, based on the RADO model, so that some of the smaller sports can share resources in the fulfillment of their Code requirements.

We will report publicly on compliance by the end of 2008, and I encourage every one of your organizations to take a hard look at your rules and programs today and contact WADA should you have any questions or require assistance so that you are fully compliant and can be reported as such.

Doping is the greatest danger facing ethical sports today, and the consequences of not facing this danger head-on through Code compliance can be far-reaching, including non-participation in the Olympic Games.

Championing the Science

A Conversation with Arne Ljungqvist

Prof. Arne Ljungqvist, who represented Sweden in high jump at the Games of the XV Olympiad in Helsinki in 1952, has dedicated his career to the health of athletes. He has held several influential posts in the field of sport and anti-doping, including chairmanship of both the IOC's and the IAAF's Medical Commissions. As chairman of WADA's Health, Medical and Research Committee and member of WADA's Executive Committee, Prof. Ljungqvist has played a pivotal role in the development of science and research to combat doping in sport. *Play True* met up with Prof. Ljungqvist during his recent meetings in Montreal to solicit his thoughts on the current state of anti-doping research and what promises it may hold for the future of safe and fair competition.

Play True: Given your experience over several decades of anti-doping, how do you perceive the impact of WADA on anti-doping research?

Prof. Arne Ljungqvist: The absence of an internationally available research fund for anti-doping was a major stumbling block in the fight against doping ever since the beginnings, back in the 1960s and 1970s. Decades ago, I raised the issue with the International Olympic Committee (IOC), in particular its Medical Commission chairman at the time, Prince de Mérode, and the IOC president himself. Some local (domestic) funds were available in a few countries but practically nothing at the international level.

In the absence of other funds, the IAF (International Athletic Foundation), which was established in 1988, funded some research in the field in the 1990s. In particular, the IAF supported research conducted by the Cologne laboratory for the creation of a library of reference substances for the identification of steroid metabolites.

The creation of WADA, therefore, had a major impact on scientific research in the field of anti-doping. Suddenly, money for long-term research projects was available and scientists started to show interest, including scientists and scientific laboratories that had not previously been involved in anti-doping. Sport today is a multi-billion dollar business. No enterprise of that size would produce a budget without a substantial part of it being allocated for research and development. The WADA budget for research into anti-doping is a major part of WADA's budget, yet it is still a minimal fraction of the financial return in global sport.

"The creation of WADA had a major impact on scientific research in the field of anti-doping. Suddenly, money for long-term research projects was available and scientists started to show interest, including scientists and scientific laboratories that had not previously been involved in anti-doping."

"We support projects for the development of techniques for the detection of new substances before they arrive on the market, just as we support projects intended to improve already existing analytical methods."

How does WADA's Health, Medical and Research (HMR) Committee determine priority themes for research funds?

We base our decisions on intelligence, experience and our understanding of the evolution of science.

Examples of intelligence are those projects that are based on the seizure of designer drugs and the development of methods for their detection.

Experience tells us that athletes are ready to try the latest. Therefore, we support projects for the development of techniques for the detection of new substances before they arrive on the market, just as we support projects intended to improve already existing analytical methods.

Examples of the understanding of the evolution of science are the support of projects intended to develop methods for the detection of gene doping. The risk that gene transfer technology may be misused for the purpose of doping is obvious to us, although it may not be there yet. But better to be proactive than reactive.

Can you illustrate how the gap is closing on cheaters?

Let me take human growth hormone (hGH) as an example. There is evidence that hGH has been used for the purpose of doping for more than 20 years, despite the fact that the substance at that time was extremely expensive and the supply very short. The reason for the high cost and limited supply was the fact that the hormone could only be obtained by

Science and Research

Essential Partnerships

WADA devotes a significant portion of its resources to scientific research. Nevertheless, these resources, which are inevitably limited, cannot alone guarantee the effectiveness of anti-doping research programs worldwide. Therefore, WADA, as the coordinator of the fight against doping, works in partnership with a number of organizations—including International Sports Federations (IFs), governments and National Anti-Doping Organizations (NADOs)—that provide valuable expertise and resources in the field of research.

For example, WADA has worked in close cooperation with USADA to implement a test for growth hormone, and the two organizations are currently working together on projects linked, among other things, to genomics and proteomics—the study of the modification of genes and proteins through the exogenous intake of substances. Serving as another example is the partnership with the Agence française de lutte contre le dopage to co-fund research projects linked to metabolomics—the study of changes in a number of biochemical parameters in human fluids following the intake of doping substances. Several NADOs fund their own scientific research projects, often in conjunction or in liaison with WADA.

IFs also partner with WADA on research, the most recent example being the development of the Athlete's Passport, a project that aims to examine the biological parameters of athletes over a certain period of time in order to identify abnormal profiles in the context of the fight against doping *(see related article, page 19).* In addition, WADA promotes anti-

extracting it from the hypophysis of dead people. With the arrival of modern genetic-based technology for the production of hormones, growth hormone suddenly became readily available.

In 1996 the IOC initiated a project for the development of an analytical method for the detection of growth hormone doping—GH 2000. The intention was to have a method in place prior to the 2000 Olympic Games. Due to difficulties in funding the project, the aim could not be fulfilled.

Now, with the WADA research fund available we also have the basis for a detection method in place *(see related article, page 15)*, as we have for the detection of, for example hemoglobin-based oxygen carriers (HBOC), homologous blood transfusions and other substances or methods. This rapid progress would in all probability not have been achieved in the "pre-WADA time."

Further examples of the closing of the gap are the findings at the Salt Lake City Olympic Games in 2002. Three athletes were found doped with an analog of erythropoietin (EPO)—Aranesp—and which had been on the market for only a few months. Probably, those involved in the athletes' doping did not believe that there was already a method in place for the detection of the substance. But it was, very much thanks to a fruitful collaboration with the producer of the substance. Therefore, we consider it very important to continuously develop the collaboration with the pharmaceutical industry *(see related article, page 5).*

What is the greatest challenge in the field of anti-doping research?

To keep up with the accelerating introduction of new drugs on the market. And not just new in the sense that they are more efficient and with fewer side effects than their predecessors but truly new in the sense that they work in a completely new way. A good example would be those drugs that the medical community hopes to have available within a near future for the purpose of gene therapy.

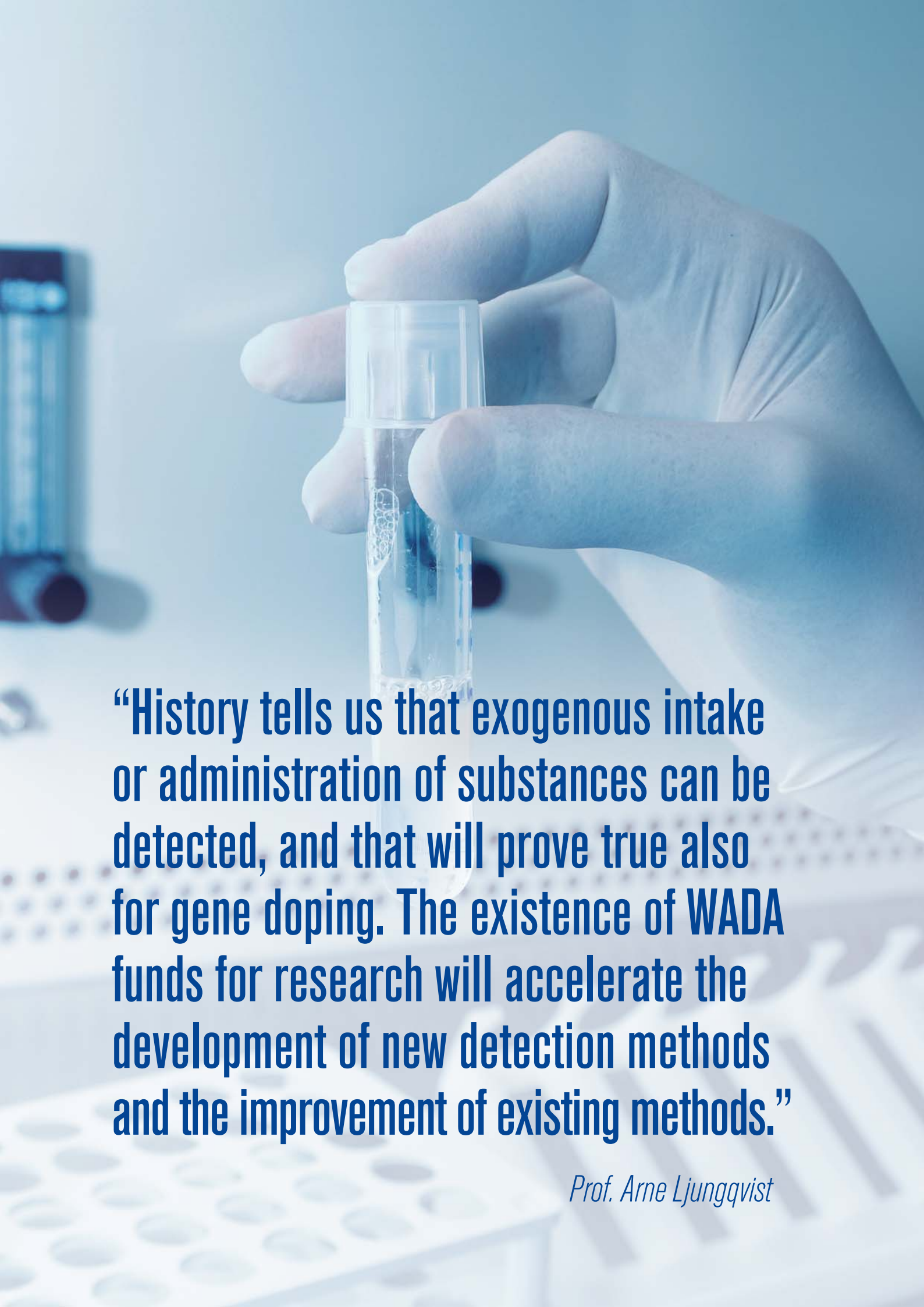
Continued on page 8.

"By collaborating with pharmaceutical companies, we gain access to an increasing amount of information on substances or molecules during their development phase, and we are able to analyze their doping potential, determine whether they can be detected by current tests and, if not, develop detection methods before they arrive on the market." *Dr. Olivier Rabin, WADA Science Director*

doping research on a government level. In Beijing in December 2006, for example, the Chinese government organized a seminar, attended by WADA representatives, in order to present the results of various scientific research projects and advance anti-doping research in the country.

The pharmaceutical industry provides another important focus for WADA and research collaboration. "Several pharmaceutical companies share our concerns and do not want their drugs, developed for therapeutic purposes, to be abused for doping purposes," explained Dr. Olivier Rabin, WADA's science director. "By collaborating with these companies, we gain access to an increasing amount of information on substances or molecules during their development phase, and we are able to analyze their doping potential, determine whether they can be detected by current tests and, if not, develop detection methods before they arrive on the market."

Similarly, WADA is exploring closer collaboration with drug agencies on an international level in order to encourage the pharmaceutical industry to take the anti-doping aspect further into account in its work and enable anti-doping agencies to be able to identify substances with doping potential far earlier and more systematically. In this regard, numerous meetings have taken place, with follow-up scheduled in the coming months.



“History tells us that exogenous intake or administration of substances can be detected, and that will prove true also for gene doping. The existence of WADA funds for research will accelerate the development of new detection methods and the improvement of existing methods.”

Prof. Arne Ljungqvist

What concerns you most about the current state of anti-doping scientific research?

The fact that the resources for research into anti-doping are still quite limited and that scientists will not find research into anti-doping as a priority field.

Scientists conduct their specific research because of personal interest in, and passion for, a particular problem. But they also take availability of funding into account. You hardly go into a research field for which there is no possibility of funding. In short: we have to compete with other areas of research for the good scientists by showing the importance of our field of research and by showing the scientists that we have money available for them. It is probably more prestigious to conduct research into cancer, AIDS, or malaria than to do research in anti-doping, though anti-doping research is also a noble cause offering significant benefits to public health. It is a tough competition, and it is for us to build up the prestige of research in anti-doping, and it is for the Olympic Movement and for the public authorities to understand the importance of proper funding. With WADA having been in place for seven years with an unchanged budget—which could not be fulfilled during the first few years—I now think it is time to increase the WADA budget substantially. And I take for granted that 20–25 percent of an increased budget will still go to research. I honestly believe that it is an inevitable evolution if the fight against doping shall continue to develop.

Where is the future of anti-doping research?

An obvious, and probably not too distant challenge will be gene doping, and to find ways to detect it *(see related article, page 12).*

We have already been successful in recruiting the necessary international expertise to assist us. But I believe that we will have to pass through both failures and disappointments before we have a method, or different methods, in place. And that may prove a costly path to pursue. I hope that our stakeholders will understand and accept that. Scientific research cannot be expected to always give immediate and clear cut answers to all questions.

One further area of research relates to the high costs of doping controls and analysis. The development of inexpensive and large scale screening methods would greatly enhance the efficiency of the anti-doping work by allowing for a significant increase in the overall number of doping controls.

But the future of anti-doping research will obviously not be limited to research into methods for the detection of doping. We need to know more about long-term effects and side effects of various types of existing and future doping regimes, as we need to know more about what drives athletes to abuse doping substances. It may sound a little pessimistic, but I am afraid that there will always be athletes who are ready to dope. We have to conduct research in order to better understand how to prevent people from resorting to doping and what strategies should be used from time to time in order to detect those who actually dope. WADA has today a very small research budget for studies based on sociological and behavioral science *(see related article, page 30).*

Let me finish with an optimistic conclusion. I have been involved long enough to have experienced all those events that have taken place when new doping substances have come into use. The comments, even from well known scientists, have often been: "You will never be able to detect that." Such were the comments when we first started to develop methods for the detection of anabolic steroids back in the 1970s. Such were the comments when attempts were being made to detect testosterone. Such were the comments when EPO came on the market in the early 1990s. And such were the comments when attempts were being made to detect growth hormone. Today we have methods available for each of these substances. Of course, they can be improved so that drug takers do not produce false negative samples. And, of course, the methods would have been developed much quicker had proper research funds been available. But history tells us that exogenous intake or administration of substances can be detected, and that will prove true also for gene doping. The existence of WADA funds for research will accelerate the development of new detection methods and the improvement of existing methods.

WADA Scientific Research Program: In Depth

WADA holds multiple science and medicine responsibilities in the fight against doping in sport, including annually preparing and publishing the **List of Prohibited Substances and Methods**, overseeing stakeholder implementation of **Therapeutic Use Exemptions**, and **accrediting and re-accrediting anti-doping laboratories** worldwide. These duties were assumed by WADA in 2004 with the entering into force of the Code and its related International Standards.

Another key priority for WADA is the development of the field of **anti-doping scientific research** for the effective detection and deterrence of doping in sport. **WADA Science Director Dr. Olivier Rabin,** in an interview with *Play True*, explains how WADA's scientific research program is structured and some of the advances the program has achieved since its inception in 2001.

Play True: Can you give us a little background on the history of research in anti-doping? WADA is a fairly young organization. When did scientific research become a priority for WADA and why?

Dr. Olivier Rabin: Before the inception of WADA, anti-doping research was handled mainly by the IOC and the IOC-accredited anti-doping laboratories. A WADA research program was identified as a key priority by the constituents of WADA and was established as early as 2001, less than two years after the agency was created.

What are the objectives of WADA's research program?

Overall, the program aims to improve our ability to detect and deter doping. We have several goals in this regard. First, we want to enhance existing tests and methods so that they become more sensitive, more rapid, more selective and less costly. We also develop new tests and technologies to detect new substances and new markers as we become aware of them. We are exploring new strategies in the fight against doping, such as the longitudinal study of athlete biological parameters—what we call the "Athlete's Passport" *(see related article, page 19).*

Our work too is devoted to the anticipation of future doping trends and practices as well as the development of a worldwide network of research teams able to coordinate and bridge scientific research efforts among the various partners.

What have been some of the key themes of the research program in 2001–2006? How are these themes identified?

WADA's HMR Committee, a panel made up of international scientific experts, identifies priority themes that need to be addressed through research. The current focus includes compounds and methods regulating and enhancing growth; compounds and methods enhancing oxygen carrying capacity of blood; endogenous and exogenous anabolic steroids; projects relating to the Prohibited List; gene and cellular technologies applied to sports; and genetic, physiologic and environmental factors related to doping.

What is interesting to note is the evolution of these themes since WADA first launched its scientific research program, revealing the necessary constant adjustments of anti-doping research to incorporate cutting edge scientific knowledge and address new issues facing anti-doping.

Who typically applies for WADA scientific research funds?

Various organizations and research teams from the five continents apply for WADA grants. The majority of the research teams are academic teams not traditionally related to the anti-doping field but applying their area of expertise to anti-doping research. It is key for WADA to attract other scientific competencies to expand anti-doping horizons. Many projects are also coming from anti-doping laboratories which apply their expertise in the field to develop innovative research.

How are research proposals solicited, and how do you determine which ones to fund?

It is quite an extensive annual process, beginning with a call for proposals in the early part of the year for submission in May. The peer review of projects by external panels of experts occurs in June and July, so that, by September, the HMR Committee can review the projects' peer review ratings and comments. The HMR Committee then presents its recommendations to WADA's Executive Committee for approval. During the balance of the year, accepted proposals undergo ethical review by external experts prior to formal acceptance and release of funds. Of course, many projects are multi-year endeavours and we actively monitor their progress throughout their entire lifecycles.

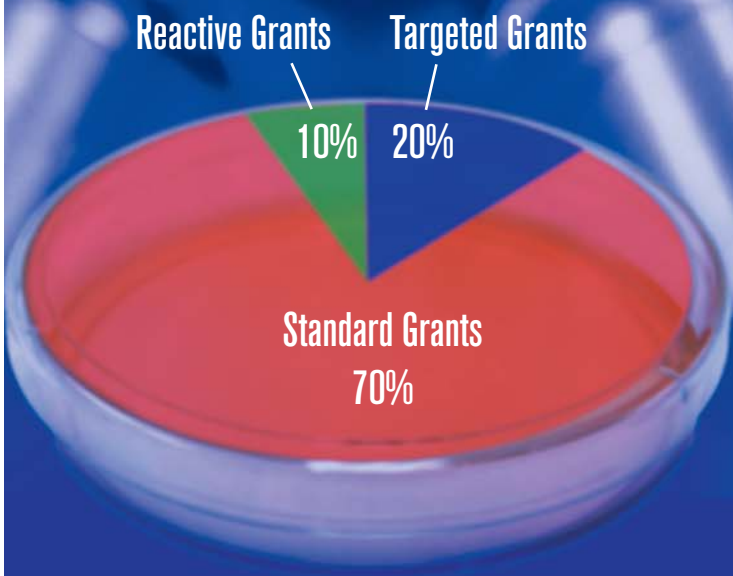
As far as determining which projects to fund, we first start with the principle that approximately 70 percent of our budget will go to quality projects in subject areas defined as priority research themes by the HMR Committee, roughly 20 percent will be devoted to topics we have targeted as needing research attention but not necessarily covered by research applications, and the rest is reserved for those situations in which we need to be reactive, such as when a new designer steroid is uncovered and we need to develop rapidly a detection method for it.

How much has WADA devoted to research?

WADA committed US$6.6 million to scientific research in 2007. That's in addition to the US$25 million that has been put toward research since 2001. What's important to recognize is that for an international agency with an annual budget of approximately US$23 million, close to 30 percent of the total budget for scientific research represents a significant

How WADA Allocates its Research Budget

WADA's research budget is divided into three types of "responses" or programs: standard grants, targeted grants and reactive grants. While approximately 70 percent of WADA's 2007 research budget is allocated to projects based on the subject matters prioritized by the HMR Committee, approximately 20 percent is targeted to specific areas to respond to specific research questions that need answering. The remaining budget is reserved to enable WADA to react in times of need, for example when a new designer steroid is uncovered and the rapid development of a detection method is required.



Quick Stats: WADA Scientific Research Program 2001–2007

291 Applications received from 205 research teams
- **50** Teams from traditional anti-doping field
- **105** Teams from outside anti-doping (e.g. genetics)

117 Projects approved for funding (approximately 40% acceptance rate)

26 Percentage of WADA's overall budget dedicated to scientific research in 2006

31.6 Total US$ in millions committed by WADA to scientific research, 2001–2007

"Science remains a component of an integrated solution in the fight against doping, and is probably more under the spotlight today—especially now that it is universally accepted that doping not only undermines the integrity of sport, but more alarmingly poses a serious threat to public health."

investment and reflects WADA's commitment to advancing the science of detection.

Let's talk about results. What can you say about the outcomes of research so far? How has the research helped to advance the fight against doping in sport?

There's quite a long list of important improvements and breakthroughs in anti-doping science, but to give you some examples, let me start with anabolic steroids. In 2005, we discovered and disclosed desoxy-Methyl-Testosterone, or DMT, the designer steroid uncovered by WADA in collaboration with the Montreal anti-doping laboratory headed by Prof. Christiane Ayotte and later related to the BALCO affair. Other key advances relating to anabolic steroids include the detection of 6 Oxo compounds; a method to detect aromatase inhibitors; the development of certified reference materials to further increase the quality of substance analyses in laboratories; proof of tainted supplements converting into nandrolone; the detection of new long lasting steroid metabolites; and confirmation of IRMS importance to detect testosterone abuse.

As for blood doping, we have been able to develop and implement a detection method for HBOCs. With the U.S. Anti-Doping Agency (USADA) as our partner, we have been working on a detection method for homologous blood transfusion. Other projects include the development of the EPO analysis software GasEpo; the study of the influence of exercise on EPO urinary profiles; exploration of new approaches for EPO detection (e.g., 2 DG, chromatography, antibodies); as well as the blood module for the Athlete's Passport.

The abuse of hGH is an area of critical concern for the fight against doping, and WADA has devoted more than US$3 million to hGH research alone. This research has included the development and validation of the differential immunoassays; co-development of the hGH markers approach (with the IOC and USADA); validation of markers for ethnic and sex differences; and demonstration of the non-validity of the Ghrelin marker.

Our research efforts have also brought us the development and validation of insulin detection, the detection of dextrans, identification of the masking properties of alpha reductase inhibitors, and the ergogenic effects of Beta-2 agonists.

Where are you currently focusing your research efforts?

We are always trying to enhance current detection methods, and in that respect we are working on extending the detection window for the EPO test and the hGH test. As for new tests, some of our priorities include autologous blood transfusion, certain hormones (e.g. IGF-1) and new steroids. Of course, new methods are being addressed, such as genomic signatures, proteomics and metabolomics, and longitudinal integration of chemical/bio-physiological parameters.

What is your feeling about WADA's ability to meet these challenges?

WADA inherited a situation in which very little research was being conducted and, in a brief period of just a few years, has built a strong international research program with various key scientific challenges solved or being currently addressed. Much remains to be done, but a momentum has been created with the strong belief that with sufficient resources, anti-doping science can deliver adequate solutions to the issues anti-doping is facing and will face in the future.

Science remains a component of an integrated solution in the fight against doping, and is probably more under the spotlight today—especially now that it is universally accepted that doping not only undermines the integrity of sport, but more alarmingly poses a serious threat to public health.

Gene Doping

An Overview and Update

Gene therapy represents an exciting and promising step forward in medical research, but its misuse to enhance athletic ability poses a serious threat to the integrity of sport and the health of athletes. WADA has been tracking the threat of gene doping since it first became a notion and has devoted significant resources to enable its detection. As early as 2002, WADA hosted a conference on gene doping at the Banbury Center on Long Island (U.S.), the first time experts from both the scientific and athletic worlds came together to tackle this issue. Then, in December 2005, WADA, in collaboration with the Karolinska Institute and the Swedish Sports Confederation, held a second workshop meeting in Stockholm (Sweden) on gene doping in sport to take stock of the situation and develop worldwide consensus on the way forward.

Instrumental in leading the debate has been world-renowned expert **Prof. Theodore Friedmann**, professor of pediatrics and director of the gene therapy program at the University of California, San Diego (U.S.). Prof. Friedmann is head of WADA's panel on gene doping and shares his thoughts on the current state of gene therapy and its implications for doping and sport.

Play True: How have recent advances in genetics impacted the world of sport?

Prof. Theodore Friedmann: Sport is being affected seriously by genetics in two important ways. The first positive effect is the development of new kinds of tests for any and all kinds of doping. WADA has developed an important set of research studies and results that indicate that the tools of the modern genetic revolution—the same kinds of tools that produced the deciphering of the human genome several years ago—will be applied to finding evidence of exposure to performance-enhancing materials and procedures. On the negative side, the huge advances in gene therapy and the methods of introducing genes into humans to treat life-threatening disease are being seen by some to allow new ways to dope by introducing genes—not to cure disease but rather to enhance athletic performance. Genes control the function of muscle cells, blood-producing tissues and the ways in which our bodies utilize energy, and we know that many of

those genes can be manipulated. The advances in methods to introduce new genes to cure are more or less identical to the methods that might be imagined for sport enhancement. That fact makes the likelihood of attempts at gene doping pretty high.

Do you believe that gene doping is happening right now?

My only honest answer to that question is, "I don't know." What we do know is that there is a growing level of interest in the sports world in the potential for gene doping, and that some scientists working on potential genetic cures for muscle diseases like muscular dystrophy or blood disorders are being approached by sports figures to inquire about the use of genes in sport. We also know that at least one prominent sport trainer in Germany has been accused of making attempts to obtain an experimental material designed to increase blood production in patients with cancer and kidney disease. His case is currently being investigated and I expect that more of this situation will come to light soon.

At the same time, I am very familiar with the problems that the field of gene therapy continues to have delivering foreign genes to humans in ways that are effective and safe. Although a number of remarkable new therapies have been developed, a number of gene therapy studies have also led to very serious and entirely unpredicted and unexpected harm to the patients, even death. This technology is highly experimental and completely inappropriate where the goal might be something other than the cure of life-threatening disease like cancer, neurological degenerations and so on. To apply this very immature technology to athletes or to any young, healthy people for the purpose of increasing some already-normal function, in my mind, is unethical and constitutes deliberate professional malpractice.

In terms of developing a detection method for gene doping, how high of a priority is this for the anti-doping community?

During the past four to five years, WADA has developed a vigorous research program designed to learn how foreign genes might be used in attempts to improve athletic performance. Many laboratories around the world are taking part in the program and the general genetics community is submitting high quality proposals to WADA. I would estimate that close to eight million dollars (U.S.) have been committed and spent in the WADA research program for gene doping, representing a significant portion of the entire WADA budget. I think that the size of the effort is appropriate for the size of the threat to sport. I am convinced that WADA will be able to develop and eventually implement effective new ways to detect doping in sport by these new methods.

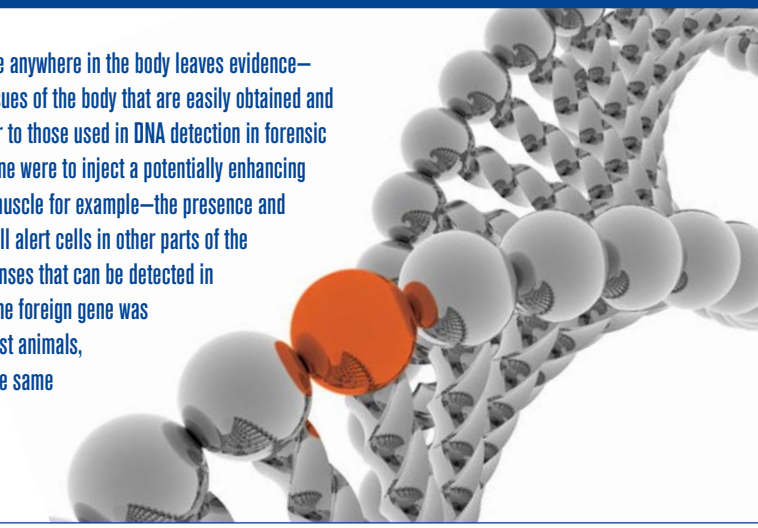
What kind of outcomes has the research provided so far?

The scientists working under the WADA banner have learned a great deal about the function of some genes that are likely to be used illicitly in gene doping attempts, such as genes that produce growth factors (e.g. hGH, insulin-like growth factor and related muscle factors) and erythropoietin. This kind of science is complex and long-term, but the results of these studies are beginning to be published in the scientific journals and shared with the general scientific community. WADA-supported studies have shown that when these genes are introduced into test animals, some of the expected effects, such as muscle growth and increased blood production, do in fact occur but also that many other unwanted and potentially disruptive effects occur to many other normally functioning genes and to the normal metabolic processes that they regulate. In some studies, a number of these "side effects" changes to genes and to metabolism are being put together to try to develop a "signature" for exposure to potentially doping agents.

"WADA is not a basic research funding agency but WADA is certainly the lead agency—in fact the only one that I know of—in the application of modern molecular genetics and DNA technology to the development of improved methods for detection in doping and in averting the use of gene therapy approaches to doping."

Detecting Gene Doping

Exposure to a foreign gene anywhere in the body leaves evidence—a "footprint"—in other tissues of the body that are easily obtained and tested, by methods similar to those used in DNA detection in forensic science. For instance, if one were to inject a potentially enhancing agent into one tissue—a muscle for example—the presence and action of that new gene will alert cells in other parts of the body and will cause responses that can be detected in places other than where the foreign gene was injected. This occurs in test animals, and it is very likely that the same happens in humans.



At the December 2005 Gene Doping Workshop, experts stated, in the Stockholm Declaration,* that "gene transfer for the purpose of therapy remains a very immature and experimental field of human medicine." Have there been any significant developments in gene therapy since then that would change the outlook for gene doping?

The technology of gene therapy is still very immature and while there continue to be advances in serious diseases, we have all been sobered by the magnitude of the problem of delivering genes safely into human beings and to the ways in which foreign genes can produce unwanted effects, some of which are lethal. Since the Stockholm workshop, there have been many improvements in these technologies, increasing evidence for success in some lethal diseases.

There have also been additional occurrences of setbacks and adverse events, including an additional death among the group of children who have been so successfully treated for immune deficiency by gene therapy. As we continue to improve the technology, we will sadly see more ways in which the methods can surprise us with unexpected effects and with serious harm to patients. In medicine, we recognize that treatment can be a two-edged sword: harm and benefit. To cure disease, we all accept both sides of the sword. For healthy young people, we should demand that we do no harm. Clearly, that is not the case for gene transfer technology.

You also stated that scientific progress "suggests that new detection methods are likely to emerge, which will help to keep sport untainted by gene doping methods." Is this true?

Yes. It is true. I have no doubt that new detection methods will be developed. Early methods are already being designed at this very moment. In exactly the same way that DNA technology has added so much in forensic science and crime detection, DNA technology will add very powerful new tools to detect doping.

Let me close by highlighting that WADA is not a basic research funding agency but WADA is certainly the lead agency—in fact the only one that I know of—in the application of modern molecular genetics and DNA technology to the development of improved methods for detection in doping and in averting the use of gene therapy approaches to doping. WADA has also sponsored the most important and influential public forums for a discussion of this societal problem and discussions are underway for another conference in 2008.

WADA has done the world of sport a great service in undertaking this work. ■

BRIEF BIO

Prof. Theodore Friedmann received his undergraduate and M.D. degrees from the University of Pennsylvania and his clinical training in pediatrics at Boston Children's Hospital of Harvard University from 1960–1962 and 1964–1965. He served as a medical officer with the U.S. Air Force and carried out post-doctoral research at the University of Cambridge (U.K.), the U.S. National Institutes of Health (NIH) and the Salk Institute in California. He has been on the faculty of the University of California San Diego (UCSD) since 1971 where he is now professor of pediatrics, Muriel Whitehill Professor of Biomedical Ethics and director of the UCSD program in gene therapy. He is currently president of the American Society of Gene Therapy, and in addition to his work with WADA's Health, Medical and Research Committee (gene doping panel chair), he has served on many national and international genetics panels and committees, including chairmanship of the U.S. NIH Recombinant DNA Advisory Committee.

*The complete text of the December 2005 Stockholm Declaration on Gene Doping is available online at: **www.wada-ama.org.**

The Researcher's Perspective

The development of a detection method for **hGH** has been a significant priority for the scientific community devoted to the fight against doping. The widespread implementation of the hGH detection method is expected to occur later this year.

The successful development of one of the strategies to detect hGH is the result of team work involving key contributions from Dr. Zida Wu, Dr. Martin Bidlingmaier and many students and technicians, led by **Prof. Christian Strasburger, chief of clinical endocrinology, Charité Universitätsmedizin Berlin, Campus Mitte**. Prof. Strasburger describes what it was like to take on the challenge of developing the hGH detection method (isoform approach), an often arduous yet in the end fruitful experience.

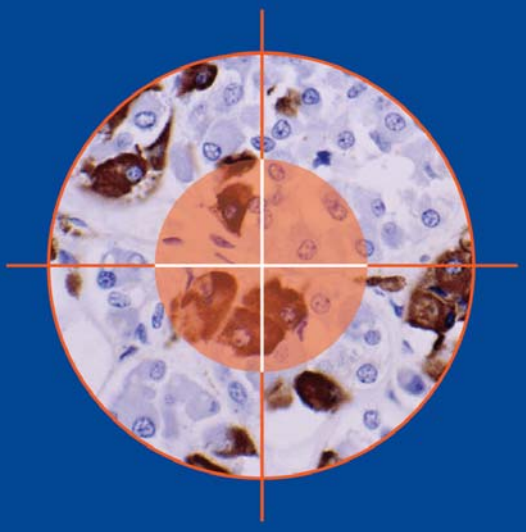
Play True: How did you become involved in research for hGH detection?

Prof. Christian Strasburger: Following completion of my doctoral thesis on chemiluminescent immunoassays in 1984 and two years of clinical training, I had the opportunity to stay for a two-year post-doctoral fellowship at the Weizman Institute of Science in Rehovot (Israel), where I learned how to generate monoclonal antibodies against hGH (1986–1988). After returning to Germany, my team and I started a long series of generating high affinity monoclonal antibodies to hGH.

An eminent problem and dilemma in clinical medicine is that different assay techniques measuring hGH yield very discrepant results, and yet, on these measurements, clinical decisions are based regarding daily injections of short children and nowadays life-long daily injection for adults with growth hormone deficiency. Therefore my colleagues and I developed and validated a method combining a monoclonal antibody and the extracellular part of a growth hormone receptor molecule to report only those GH-forms in circulation which retained the capability of activating GH-receptors. In the validation process of this method we recognized that it had a clear preference for recombinant hGH over pituitary-derived hGH in human serum.

So that was the start. How long has the entire process taken, what have been the major steps involved?

The initial observation was made in 1996 and it took more than 12



About hGH Detection

HGH is a hormone that is synthesized and secreted by cells in the pituitary gland located at the base of the brain. HGH is known to act on many aspects of cellular metabolism and is also necessary for skeletal growth in humans. The major role of hGH in body growth is to stimulate the liver and other tissues to secrete insulin like growth factor (IGF-1). IGF-1 stimulates production of cartilage cells, resulting in bone growth and also plays a key role in muscle and organ growth.

HGH is prohibited both in- and out-of-competition under the List of Prohibited Substances and Methods. Commonly reported side effects for hGH abuse include: diabetes in prone individuals; worsening of cardiovascular diseases; muscle,

months before we obtained initial funding from the German Federal Institute of Sports Sciences to screen the more than 100 monoclonal antibodies to hGH that had previously been generated for their ability to detect the existing structural differences between recombinant hGH as a monomorphic preparation and the mixture of hGH isoforms as secreted by the pituitary gland.

After combining two antibodies each in a sandwich immunoassay format for the measurement of recombinant hGH on one hand and pituitary-derived hGH on the other hand, we approached the consortium GH 2000, led by Prof. Peter Sonksen, and informed them about our potential solution to the problem they were addressing. The consortium collaborated in providing us 40 blinded samples derived from either pituitary stimulation tests for hGH release or from the pharmacokinetic profiles after injection of hGH in GH-deficient adult patients. Our differential immunoassay approach permitted us to differentiate these 40 serum samples without error. This blind test of the differential immunoassay strategy based on hGH isoform differences certainly represented a significant breakthrough and we were able to publish these findings in *The Lancet* in early 1999.

It was tedious to maintain research support and after the 2000 Olympic Games in Sydney, the IOC provided a research grant for three years by which we aimed to further increase the discriminatory potency of our technique and select the most suitable monoclonal antibodies among the large panel of anti-hGH monoclonals that were previously established.

Before the 2004 Summer Olympics, WADA, jointly with USADA, hosted scientific workshops of the most active scientists involved in hGH anti-doping research worldwide and decided to move forward with the isoform approach.

The isoform approach by differential immunoassay strategy for the detection of hGH abuse was applied during the Athens Summer Olympic Games and the Turin Winter Olympic Games. Because it is not feasible that an academic hospital provides immunoassay reagents of the highest quality control standard for a long period of time to all WADA-accredited laboratories, we started to look for collaboration with the diagnostic industry. Unfortunately, our first selected partner, after more than two years of collaboration, decided to discontinue the joint development project for the differential immunoassay kit. We therefore had to identify a new partner in the diagnostic industry and found a highly reputed collaborator in Germany. At the end of 2006, the CMZ-assay company was founded which will be marketing these differential immunoassay kits later in 2007.

What is the status now of the detection method for hGH?

By changing the performance platform of the differential immunoassays from microtiterplate-based fluorescence immunoassays to tube-based chemiluminescent immunoassays and by improving the antibody immobilization technique, the lower detection limit of our

joint and bone pain; hypertension and cardiac deficiency; abnormal growth of organs; accelerated osteoarthritis. In untreated acromegalic individuals (known for pathological over-production of hGH), many of the symptoms described above are observed and life expectancy is known to be significantly reduced.

The test to detect hGH abuse is a blood test and is reliable. It was introduced at the Athens Olympic Games in 2004 and other major sport events. However, because hGH is often taken by doping athletes in the off-season to optimize performance, the test is most effective when implemented in a no-advance-notice out-of-competition strategy. Widespread implementation of the test, once produced on a commercial basis, will allow routine testing.

Another test, in its final research stage, will be combined with the current test to further enhance the detection window for hGH abuse. The concepts and development of both hGH tests have been systematically reviewed by international independent experts in such fields as hGH, endocrinology, immunoassay, analytical chemistry, etc. These tests are the outcome of nearly US$10 million in research over the course of more than 11 years, first initiated by the IOC and the European Union, and then taken over by WADA when it was created and had adopted scientific research as one of its priority activities.

"Our method's underlying principle is that these structural differences between recombinant hGH and hGH in human sera exist regardless of age, gender, ethnic background or sports discipline. With the improved lower detection limit as achieved during the presently completed commercialization, the usefulness of the method is further significantly improved."

method could be dramatically improved. The method is robust and stable and is expected to pass industrial validation and certification tests in the forthcoming months to then become generally available.

Why is the detection of hGH so important?

HGH has apparently been used widespread because it was considered undetectable and the known physiological effects of growth hormone are muscle building as well as lipolytic and therefore providing energy substrates which cheating athletes obviously fancy. Growth hormone has been discovered in the luggage of an elite athlete and several athletes have meanwhile confessed having abused hGH to enhance their performance. If clean athletes are to compete on a level playing field, then hGH detection must be implemented.

How confident are you in the detection method's reliability and validity?

We are extremely confident in this method because it is a very direct approach. If an athlete abuses hGH, then by the direct measurement of hGH, doping analysts have the best opportunity to prove the abuse. Our method's underlying principle is that these structural differences between recombinant hGH and hGH in human sera exist regardless of age, gender, ethnic background or sports discipline. With the improved lower detection limit as achieved during the presently completed commercialization, the usefulness of the method is further significantly improved.

What have been the most significant challenges you have encountered along the way?

After the idea was there, the major challenge was to obtain and maintain research funding for this activity at a university teaching hospital. We also had to learn that the transfer from an academic setting to commercial rollout of such a differential immunoassay involved tedious work, but also provided opportunities of methodological improvement. Finally, when we started working on this project, WADA was not yet founded and the message in support of anti-doping was not as unequivocal as it is today. Even our colleagues were sceptical about patenting such an idea due to the limited number of interested organizations at the time.

What advice would you give young scientists interested in anti-doping research?

I would advise young scientists who have begun to enjoy research in one area to take a step back and take a broader look at different approaches to the solution of the problems supposed. While traditional anti-doping laboratories are using gas chromatography / mass-spectromaty (GC-MS) methods to detect small substances like anabolic steroids, amphetamines and so on, recombinant proteins approximately 100 times larger such as EPO or growth hormone cannot be detected from serum samples by these techniques and if the GC-MS methodology is to be applied, then an immuno-recognition and affinity chromatography step has to precede the analytical step to allow removal of the bulk of other proteins in the sample otherwise interfering. Therefore, immunoassays traditionally used in the neighboring discipline of endocrinology have their place and in turn endocrinologists are learning from doping analytics and are bringing GC-MS for steroid metabolites to the clinical routine. Young scientists should broaden their horizons and experience and know that there is "more than one way to Rome."

What do you see for the future of anti-doping research?

I believe anti-doping research has to use a dual strategy. First, there needs to be more funding of anti-doping analytical research to narrow the gap between the also science-driven doping versus the anti-doping movement. Secondly the phenomenon of doping in my opinion requires sociological and psychological research looking at sports as a mirror image of human society and we have to strive to better understand what goes wrong in society leading to the use of performance enhancing drugs in sports. We need to convince young athletes that they should compete by fair means, even if it means not winning.

BRIEF BIO:

Prof. Christian Strasburger is chief of clinical endocrinology at Charité Universitätsmedizin Berlin, Campus Mitte. He received post-doctoral training at the medical faculties of the universities in Lübeck and Munich (Germany). He also held a post-doctoral fellowship at the Weizmann Institute of Science in Revohot (Israel).

Prof. Strasburger has published more than 140 scientific articles and serves on the editorial board of *Pituitary, GH- and IGF-research, Journal of Endocrinological Investigation.* He was recently appointed editor-in-chief of the *European Journal of Endocrinology*. In addition, Prof. Strasburger serves on the councils of the Growth Hormone Research Society and the European Neuroendocrine Association, and served formerly on the German Endocrine Society Council.

Prior to university, he was a rower on the German junior national team and competed at the world championships.

GLOSSARY:

Affinity chromatography: Chromatographic method of separating biochemical mixtures, based on a highly specific biologic interaction such as that between antigen and antibody.

Chemunilescence: Emission of light (luminescence) without emission of heat as the result of a chemical reaction.

Chromatography: Family of laboratory techniques for the separation of mixtures. It involves passing a mixture dissolved in a "mobile phase" through a “stationary phase,” which separates the analyte to be measured from other molecules in the mixture and allows it to be isolated.

Immunoassay: Biochemical test that measures the concentration of a substance in a biological liquid, typically serum or urine, using the reaction of an antibody or antibodies to its antigen. The assay takes advantage of the specific binding of an antibody to its antigen.

Isoform: Version of a protein with only small differences to another isoform of the same protein.

Mass spectrometry: Analytical technique used to measure the mass-to-charge ratio of ions. It is used in anti-doping to find the composition of a physical sample by generating a mass spectrum representing the masses of sample components.

Microtiterplate: a flat plate with multiple "wells" used as small test tubes.

Monoclonal antibodies: Antibodies that are identical because they were produced by one type of immune cell and are all clones of a single parent cell.

Pharmacokinetics: Discipline of pharmacology dedicated to the determination of the distribution and elimination of substances administered to a living organism.

The Frontier between Anti-Doping and Medicine:

The Athlete's Passport

By Dr. Alain Garnier, WADA Medical Director

Given the various practices that have been used since ancient times to enhance human performance, doping can be regarded as having existed since the beginnings of sport. In this respect, it is likely that human behaviour has changed less than the arsenal of treatment methods available. In the past, more often than not, a substance was taken sporadically, during or in proximity to a sporting event. In this context, the toxicological approach, based on the detection of a substance or its metabolites in a urine sample, can be considered a valid solution. Unfortunately, sport has recently seen the establishment of organized, planned doping, based on a more rigorous scientific approach that makes use of all available resources. Consequently, it has become increasingly difficult to detect modern doping methods using the traditional anti-doping approach adapted to old techniques.

The limits of the system have already been reached if one considers the new protocols for the doping abuse of EPO (microdoses, intravenous solutions, etc.), autologous blood manipulation, recourse to growth factors or even cellular therapy. The arrival of biotechnologies and products as a result of pharmacogenetics will no doubt further heighten this trend. In order to ensure that the mechanism does not operate in favour of cheats, as opposed to in favour of the organizations leading the fight against doping, the methods to combat this scourge must be adapted and anticipate future trends. The fight against doping has to be equipped with the same means, both scientific and financial, as those used by cheats if it is to avoid becoming inefficient. In view of the contribution of biotechnologies and new doping protocols, endeavouring to detect a substance in the body at a given moment is no longer sufficient. Some coaches are effectively capable of ensuring that the athletes concerned are "free" of all traces of substance during presumed testing periods, despite the implementation of unannounced testing programs to tackle this stumbling block. Moreover, the ergogenic effects obtained by an athlete during treatment can, in some cases, last weeks, months or even years, as recently demonstrated in relation to anabolic steroids.

Consequently, it appears that the nature itself of the available substances, combined with the sophistication of the protocols used, can rapidly illustrate the limits of the direct detection of banned substances, particularly if only the urine method is used. The majority of doping substances are drugs used for purposes other than their medical intent; these have numerous physiological, biological and metabolic effects on the body. It would therefore be interesting to try to objectivize these different effects through a more holistic, medical approach. The study of indirect metabolic effects on the body subsequent to the intake of a xenobiotic is known as metabionomics. It is already producing encouraging results in veterinary medicine, for example, to monitor the absence of use of hormones in breeding.

Furthermore, the use of indirect markers is common in medical practice. Thus, an elevated transaminase (hepatic enzyme) level in a patient indicates alcohol absorption, regardless of the blood alcohol level at the time of the dose. Generally speaking, in practising medicine, a diagnosis is rarely based on a single biological examination; on the contrary, it is based on a set of combined clinical and biological elements that make up the body of arguments to justify the treatment perspective.

The application of these general principles to monitoring doping through a biological passport could be used as a tool in addition to the urine and blood tests. The identification of relevant biological

parameters should make it possible to establish individual distinguishing profiles. This biological tracing throughout an athlete's entire sporting career should make any illegal preparation far harder to implement, thanks to the detection, in the event of such preparation, of indirect signs of the use of banned substances or methods. As with speed detection on roads, it is a matter of progressing from fixed radars (the location of which is often known) to mobile radars that measure speed on a permanent basis.

The Athlete's Passport, contemplated by WADA as far back as 2002, is based on a similar approach. In its final form, it would be used to meet the two-fold objective of improving the effectiveness of the fight against cheats and protecting the health of athletes. At the same time, it should also enable the intelligent targeting of athletes and promote doping controls during apparently suspicious or critical periods. From a more medical point of view, this biological monitoring is also likely to illustrate biological disturbances linked to pathological processes, whether or not these are the result of doping manipulation. If necessary, early and effective medical intervention can thus take place. In terms of public health, such an approach is very probably more effective than that consisting of advocating medically assisted doping. Above and beyond the advantages described, such a model could also constitute a good global indicator of the prevalence of doping, information lacking today in order to optimize the fight against doping.

In terms of interpretation of results, the registration of data is also of considerable interest. Indeed, biology and medicine are well aware of the limits of interpretation when references for normality are based on population averages. The registration of all individual data means that it is no longer necessary to consider an average value as the norm; on the contrary, it makes it possible to refer to the individual's own values and assess variations in these. In a model using individual systems of references, the study of the profile and the intra-individual variability becomes more relevant, bearing in mind that the validity and sensitivity will increase with the amount of data collected.

Although the concept is simple, in that different models have already been validated for widespread use in other fields, such as epidemiology, legal medicine or even veterinary monitoring, its practical application in the field of anti-doping poses a number of problems. In order to respond to the complexity of this situation, WADA has developed a multi-level strategy:

- A meeting of scientific experts to identify the most relevant parameters to be monitored (the fields of haematology and endocrinology are currently involved), as well as the data processing model to be employed.
- A legal study in order to assess the legal validity of the model proposed and the nature of possible disciplinary decisions.
- A feasibility study and implementation of strategies that take into account the features and specificities of different sports (the monitoring parameters could vary from one discipline to another). In this context, a pilot project (the Athletes for Transparency program) under way, developed in France and backed by WADA, should assess the athletes' support for this concept considering the volunteer-based approach. It also constitutes a technical feasibility study in terms of sample collection procedures (standardization of collection and laboratory analysis protocols) and the implementation of an online centralized results platform.
- A pilot study to test and validate the most appropriate mathematical processing model is currently being developed with the IAAF and the Lausanne anti-doping laboratory.

In conclusion, if the urine and blood tests, which are essentially toxicology tests, are to be maintained and improved through increasingly sophisticated analytical methods, these will inevitably have to be rapidly combined with effective tools such as biological monitoring. In view of the challenges posed by current and future biotechnological methods, an increasingly global and biological approach, similar to that used in forensic science, is necessary in order to respond with the expected efficiency. Nevertheless, the descent of medicine and its rules on the field of anti-doping should be accompanied by in-depth bioethical reflection if the experience is to be effective and durable. ■

The Athletes for Transparency program (left), developed in France and backed by WADA, constitutes a technical feasibility study in terms of sample collection procedures (standardization of collection and laboratory analysis protocols) and the implementation of an online centralized results platform for the type of 'biological passport' now being considered. www.athletesfortransparency.com

Sports medicine physicians, clinicians and scientists:

Your duty and responsibility to oppose doping

By Walter R. Frontera, MD, PhD, President, International Federation of Sports Medicine (FIMS)

As the international organization promoting and representing sports medicine around the world, FIMS is interested in and committed to developing relations and establishing collaborations with organizations that share a common vision, mission, objectives, and activities. WADA is one of those important groups.

The basic principle that the practice of sport and the tradition of physical activity and exercise must promote physical and mental health should be protected and respected. Further, the concept that excellent health is not only desirable but necessary for optimal performance in competitive sports must be understood and accepted. Therefore, all sports medicine physicians, clinicians, and scientists have the duty and responsibility to oppose the use of doping practices in sports based on moral, ethical, and physiological grounds.

In FIMS we believe in these principles and have acted accordingly since the foundation of our Federation in 1928. Moreover, the Continental Associations of FIMS in Africa (African Union of Sports Medicine), the Americas (Pan American Confederation of Sports Medicine), Asia (Asian Federation of Sports Medicine), and Europe (European Federation of Sports Medicine Associations), in addition to the countries in the region of Oceania strongly support this position. Evidence to this is the active involvement and participation in anti-doping activities of many of the leaders and members of FIMS.

One of the main objectives of FIMS is to educate sports medicine physicians around the world. We strongly believe that this will have as a consequence an enhancement of the quality of medical care for athletes at all levels of competition and in all regions of the world. This objective is fulfilled by means of congresses, team physician development courses, advanced team physician courses, publications (including an electronic journal), a Web site, and the preparation and dissemination of position statements on various topics of scientific interest and importance. Given the crucial role of education in the development of a human being and the formation of professionals in all disciplines and areas of knowledge, these activities represent one important way FIMS has joined the movement against doping.

In FIMS we look forward to continuing our work in this area and to partner with those that share the same values. The work done by WADA and other similar bodies must be supported by professional organizations to be more effective. This is exactly what FIMS intends to do and we hope to join WADA in this worthy endeavor.

"All sports medicine physicians, clinicians, and scientists have the duty and responsibility to oppose the use of doping practices in sports based on moral, ethical, and physiological grounds."

BRIEF BIO:

Walter R. Frontera, MD, PhD, is dean of the faculty of medicine and professor of physical medicine and rehabilitation (PM&R) and physiology at the University of Puerto Rico. Dr. Frontera completed his medical studies and a residency in PM&R at the University of Puerto Rico and a doctoral degree in exercise physiology at Boston University.

Dr. Frontera's career is rich with positions and achievements dedicated to the health of athletes: establishment of the Center for Sports Health and Exercise Sciences at the Albergue Olímpico, the training center of the Puerto Rico Olympic Committee (PROC); PROC chief medical officer in Central American and Caribbean (CAC), Pan American, and Summer Olympic Games; director of medical services, CAC Games; president, Puerto Rico Sports Medicine Federation; member, PROC; and Earle P. and Ida S. Charlton Professor and chairman of the department of PM&R, Harvard Medical School and Spaulding Rehabilitation Hospital.

As president of FIMS and the Pan American Confederation of Sports Medicine, his main research and clinical interests include sport injury rehabilitation and the effects of aging and exercise on skeletal muscle. Dr. Frontera has published more than 200 scientific publications and currently serves as editor-in-chief, *The American Journal of PM&R*; board member, International Society for PM&R; and fellow, Association of Academic Physiatrists, American Academy of PM&R, and American College of Sports Medicine.

Interactive Anti-Doping Exhibit made permanent at Olympic Museum

by Francis Gabet, Director of the Olympic Museum

OLYMPIC MUSEUM
LAUSANNE

In May 2007, the Olympic Museum in Lausanne added to its permanent exhibitions a new space devoted to the fight against doping in sport. This project came to light as a result of the close cooperation between the Olympic Museum, Dr. Patrick Schamasch, director of the IOC Medical and Scientific Department, Dr. Martial Saugy, technical director of the Swiss Laboratory for Doping Analysis, and WADA.

It was extremely important for the Olympic Museum to renew this space, not only because doping is significant in relation to the future of sport, but also, quite simply, because visitors to the Olympic Museum cite doping among the top three key issues that they would like to see dealt with when they visit the museum.

In order to make the subject appealing, the Olympic Museum sought to offer the public a recreational and interactive space. The pivoting showcases and cubes, boxes containing information sheets, videos and touch screens for a final quiz will undoubtedly make this space dynamic and attract visitors.

This exhibition aims to give the public an overview of the past, present and future of the fight against doping. While doping in sport is not a new phenomenon, it is now important to know the various forces involved in the fight against doping. At the Olympic Games, attention is drawn to the IOC's "zero tolerance" policy and, on an international level, the various fields of WADA's activities are presented, with an emphasis on scientific and medical research, which is one of the essential weapons in the fight against doping.

The fight against doping also entails prevention and education. And, although the issue of doping often refers to the sporting context, doping conduct can be understood only in relation to society as a whole. Topics such as the cult of performance and the professionalization and increasing media coverage of sport are presented to those visitors who wish to find out about the phenomenon of doping.

While doping threatens the educational values of sport and contravenes the spirit of sport, it represents a genuine danger to the health of athletes. The List of Prohibited Substances and Methods is exhibited in an original form: ten small cube-showcases illustrate the Prohibited List categories with a presentation of the banned substances and an explanation about their medical use, established doping effects and, in particular, side effects.

In order to safeguard doping-free sport, doping controls are crucial. The control procedure is illustrated in 12 stages through photos, from the selection of athletes right through to result management.

Raising athlete awareness is also a cornerstone in the fight for clean sport, and a video with testimonials from well-known athletes presents an optimistic vision of doping-free sport to the public. At the end of the exhibition, visitors can test their knowledge by means of a quiz, originally devised by WADA and readapted according to the topics dealt with by the Olympic Museum.

The exhibition will also be used by the Education and Culture Department during guided tours and school visits. Anti-doping kits, anecdotes and a Whizzanator will support the presentation.

UK Sport Embraces ADAMS

By Russell Langley, Communications Manager, UK Sport

UK Sport has been up and running on ADAMS since November 2006, and with it rolling out the latest release in the coming weeks we caught up with the members of the team at the National Anti-Doping Organization (NADO) for the UK to see what impact the system has already had, and what it hopes to achieve in the future.

WADA has been developing ADAMS (Anti-Doping Administration and Management System) since 2004, with UK Sport now having spent over a year significantly assisting with ideas for functionality, testing and refinements to help ensure that each release fully meets the needs of all concerned. The relationship first came about when UK Sport made a strategic decision in late 2005 to fully engage with ADAMS and commit resources to its implementation.

The need for dedicated resource was paramount and led to UK Sport contracting consultant Dave Beaumont who has worked closely with members of the Drug-Free Sport team to ensure a smooth transition to the system.

"We held a number of testing days over the past few months, following a mission through the entire process of planning, allocation and sample collection to ensure there are no unforeseen circumstances," said Beaumont. "These flagged up differences in the way we work to the way ADAMS allowed. Working closely with WADA we have been able to iron these out in order to minimize the impact on our working practices."

UK Sport's first foray into ADAMS was through the Therapeutic Use Exemption (TUE) management element which has been in place since November 2006.

Michael Stow, science & information coordinator at UK Sport, said: "We could see straight away how ADAMS allows for better tracking of TUEs, which means we can now effectively monitor the types of medication athletes are asking for approval to use. This obviously helps from a TUE point of view, but can also provide a useful source of intelligence which can help with the planning and allocation of tests."

In April 2007, UK Sport began managing its testing and results functions through ADAMS, with all aspects from test allocation to the notification of results now centrally managed. The first batch of missions were set up during January and February, and from the start of April all tests are now managed through ADAMS. The Testing Team at UK Sport allocates the missions and the Doping Control Officers (DCO) then log in to see where they need


ADAMS at work at UK Sport.


ADAMS Results Team who manage findings.


ADAMS Testing Team who plan and allocate all tests.

ADAMS "not only ensures testing across the world is a little smarter, and therefore more effective, but importantly it also gives more confidence to athletes about the quality of the testing program and the faith they have in our ability to catch anyone using a prohibited substance."

to be and when in order to carry out the test.

With the UK Sport team getting to grips with ADAMS, the next phase of preparation involved the induction of the DCOs, as Julia Hardy, quality & administration assistant at UK Sport explains:

"Being out in the field, it was vital that the DCOs understood ADAMS, particularly the areas which slightly changed the way we work. With that in mind we produced a tailor-made user guide for them covering both ADAMS and UK Sport processes. To back this up they also have a hotline they can call at any time to talk them through any issues they have. However, the user-friendliness of the system means this has hardly been used."

Once the results are back from the laboratory, they are inputted into ADAMS from where each stage of the results management process can be monitored to ensure Code compliance.

The final stage of the roll-out—athlete whereabouts—is imminent and with the high profile cases in the UK over the past 12 months, arguably the most significant for UK Sport. UK Sport has operated its own online whereabouts system since July 2005, and the priority will be to induct the athletes currently using this on to ADAMS before rolling it out across all other sports. A schedule for this process is currently being drawn up, with the emphasis on quality induction, backed up by thorough education and support for athletes.

Overseeing the implementation is Andy Parkinson, head of operations at UK Sport. He said: "It has taken a tremendous amount of work to get us to this stage but the fruits of that labor are already starting to show and we are delighted with how well the roll-out of ADAMS in the UK has gone.

"The real benefit of ADAMS will come when more NADOs and International Federations come on board, as the volume of information it will contain will be invaluable. For the first time we will have a global test history of athletes, allowing us to see who was tested where and when, and what the outcome was of those tests.

"Importantly, we will also be able to see what tests are planned by different organizations meaning an end to scenarios whereby there might be duplication of tests on athletes by different bodies. This not only ensures testing across the world is a little smarter, and therefore more effective, but importantly it also gives more confidence to athletes about the quality of the testing program and the faith they have in our ability to catch anyone using a prohibited substance or method.

"Looking ahead, we're keen to remain integrally involved in the ongoing development of ADAMS. Having worked on it for so long we feel a great sense of ownership and want to do everything we can to explain the benefits to our counterparts across the world. We have recently held discussions about the mid term future of ADAMS and have plenty of ideas on how ADAMS can be further developed and we look forward to sharing our thoughts with WADA."

BBC Radio's Tennis Correspondent Jonathan Overend talks to the International Tennis Federation's (ITF) **Dr. Stuart Miller** about the Tennis Anti-Doping Program, which is now exclusively managed by the ITF.

Stuart Miller came to the ITF from the UK's Leeds Metropolitan University, where he was course leader of the Sport and Exercise Science BSc degree. Stuart has a BSc in sports science, an MSc in biomechanics, and a PhD in neuromuscular biomechanics.

In 1997, Miller became the secretary general of the International Society of Biomechanics in Sports, the world's leading sports biomechanics society. He was elected as a vice president of the organization in 2001. His expertise is in the field of sports science, and he regularly contributes scientific papers to national and international publications.

As well as Anti-Doping, Stuart's other responsibilities at the ITF include Technical (equipment) and Sports Science & Medicine.

When the ITF took control of the WTA drug testing program on 1 January 2007, a year after reaching a similar agreement with the ATP, a significant shift in the policing of the sport was complete. The Tennis Anti-Doping Program became exclusively managed by the ITF, ending the sometimes confusing and potentially conflicting days of player organizations policing and prosecuting their own members. It's just the start, and fresh challenges lie ahead in the next few months. With important revisions being proposed by the anti-doping community to the World Anti-Doping Code for as early as 2008, there could be crucial implications for professional tennis players who fail anti-doping tests. Jonathan Overend spoke to Dr. Stuart Miller, head of the ITF's Science and Technical Department that oversees the program.

Jonathan Overend: Can you explain how drug-testing procedures in tennis have changed, if at all, since the ITF took over the ATP and WTA programs?

Dr. Stuart Miller: From an administrative perspective it's now more streamlined. We don't have three separate organizations working with a single test provider. A key aim at the start was for the players not to notice a difference. We didn't want players saying, "The way I'm being treated has changed," or, "the people who are conducting the tests are doing things differently." We're still operating on the same principles that testing is largely random, with no advance notice. All the principles for an effective testing program are in place.

Who does the testing?

The ITF contracts IDTM [International Doping Tests and Management] who are one of the biggest independent testing organizations in the world. They work a lot with WADA in other sports; they have a large network of doping control officers and chaperones throughout the world; and they facilitate the testing requirements that we put in place.

What about back at base—has it meant an increased workload for the ITF?

There's no doubt that we're busier than before. There's more testing to organize, we're working closely with both the ATP and WTA, and there are more issues to deal with (either on-site or results management) but we have made the program, as a whole, more efficient by centralizing it.

Ethically, for the good of the sport, was it necessary that both ATP and WTA programs came under the control of the ITF?

I'm not going to comment on the rights and wrongs of player organizations trying to police themselves, but the potential for conflict of interest is clear. While there's no suggestion that this influenced the ATP's or WTA's operation of its programs, to be seen to have no conflict of interest is extremely important and from the ITF's point of view, having a program which is free of suspicion, which is transparent and cohesive, is very important. I think it's been a good thing and the fact that we've reached agreement with the ATP and WTA shows they think it is as well.

How many times a year are the top players tested?

Last year there were close to 2,000 tests in tennis, which puts

"Because testing is random, the more events you play the more likely you are to be tested; likewise, the better you do in those tournaments the more likely it is. Top players would expect to be tested more than ten times per year."

us in the upper range of Olympic sports in terms of tests conducted. The frequency of testing depends on the players' rankings. Because testing is random, the more events you play the more likely you are to be tested; likewise, the better you do in those tournaments the more likely it is. Top players would expect to be tested more than ten times per year.

Since the ITF has had control of the whole tennis anti-doping program, how many positives have there been?

In 2006 there were three doping offences—one in Australian Open qualifying, one in a challenger event and one in a wheelchair event. So, relatively few considering there were nearly 2,000 tests.

So do you believe it's a clean sport?

You would have to draw that conclusion. It would be naive to think we catch every person who is engaged in doping; however, based on the principles that we're operating within the program, the record in 2006 is certainly indicative of a clean sport. And you need a comprehensive test program to demonstrate whether you have a clean sport or not.

In the sport of track and field, athletes have been found guilty of taking a designer drug that nobody had known about: THG. Is that why you feel it would be naive to think you're catching all the cheats? The fear there might be an 'undiscovered' drug?

Elite sport is lucrative for players and there have been instances in other sports where the temptation to reach the top by unfair means has been too great. However, we have no evidence that it's the case in tennis. Tennis is a difficult sport to categorize in terms of its physiological demands and therefore the type of substances that players could see as key to giving them success. Tennis has a number of contributors to success. It has endurance, speed, agility but it also has skill. You can't be a great player without a significant amount of skill, and that in itself helps tennis be a little more confident that there isn't widespread abuse of designer substances that we don't yet know about.

A few years ago the ITF was very vocal in advising players against the use of nutritional supplements. What is the very latest advice?

The ITF Sports Science and Medicine Commission has very recently updated the statement which is distributed through our Web site and through our testers to players. It does say that players are recommended not to take any dietary supplements because it's impossible to guarantee their safety. As long as the World Anti-Doping Code maintains a policy of strict liability, the players are held accountable whatever the circumstances, so they take supplements at their own risk.

Finally, what is the ITF doing to educate players about the risks and dangers of doping?

It's not just players, but also coaches we want to educate and we're expanding our work in this field. We've produced a Q&A leaflet on Therapeutic Use Exemptions, we have a 24-hour hotline which is open to all players who have questions about medications or the Prohibited List, and we also work at junior level with presentations and Web site information so we can get to the players at a time when they are receptive.

Tennis anti-doping timeline

www.itftennis.com/antidoping

Late 1980s: Drug testing in tennis begins with the Men's Tennis Council.

1990: With the formation of the ATP Tour, testing is extended to include performance-enhancing, as well as recreational, drugs.

1993: ITF, ATP and WTA create a joint anti-doping program that covers the whole of the sport.

1999: WADA is founded as an international independent organization to promote, coordinate, and monitor the fight against doping in all sport.

2002: ITF President Francesco Ricci Bitti is elected to the WADA Foundation Board. Consisting of 38 representatives from the Olympic Movement and governments, this is WADA's supreme decision-making body.

2006: ITF takes over the management, administration and enforcement of the program at ATP-sanctioned events.

2007: ITF takes over the same duties at WTA-sanctioned events.

Sport as Equalizer

Paralympics and World Championships multiple gold medalist Tanja Kari was once known simply as "the skier." She continues that tradition of single-minded dedication today, giving her all to keeping sport clean and fair for future generations.

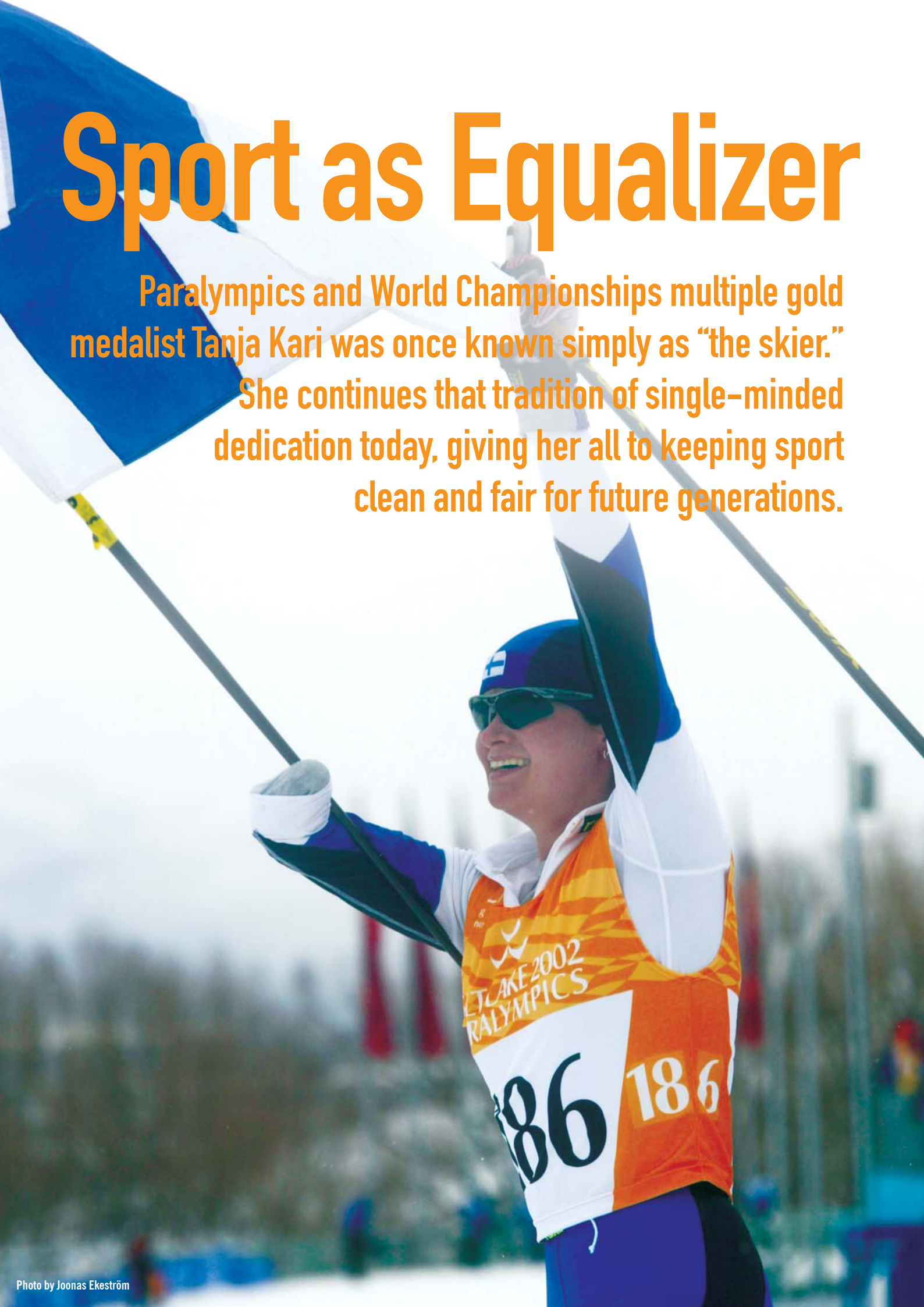


Photo by Joonas Ekeström

Finnish cross-country skier Tanja Kari was born to be a champion on skis. Placed on her first set of skis at the age of four, Tanja raced in her first competition when she was six. Despite being born with a disability that took away her capacity to use two poles—two poles offer balance and speed, important factors for any skier—Tanja excelled so much while using only one pole, that she competed with able-bodied kids and garnered immense respect along the way.

"In the beginning, I was able to be equal with other kids who didn't have a disability. Kids can sometimes be pretty cruel to each other, but they also respect other kids who are good at sport. So I think skiing gave me a way to grow up equal without thinking about my disability," said Tanya.

She quickly became known as 'the skier' in her community and her skills as an athlete became more known than her disability. Today Tanja is one of the greatest female winter Paralympic athletes in history with an impressive list of achievements:

- Four-time Paralympian:
  - *2002 (Salt Lake City) three gold*
  - *1998 (Nagano) three gold*
  - *1994 (Lillehammer) two gold, one silver*
  - *1992 (Albertville) two gold*
- Ten-time World Championships medalist (nine gold, one silver)

Tanja retired at 30, following the 2002 Paralympic Games, fulfilled by her career and achievements as an athlete.

Play True: What has sport given you?

Tanja Kari: Sport has given everything to me. It's the basic building block of who I am. It helped me observe society via sport and sport via society. It also gave me a great education.

What's your opinion of anti-doping right now? What is the best way to convince young people not to dope?

I think we need to encourage athletes and make them think, "What is the core of sport?" There has to be joy and satisfaction, and there must be a healthy relationship. This has to start with young kids. We need to create safe and enjoyable atmospheres so kids get pleasure from sport.

What is important to you when we talk about anti-doping as an issue?

I believe in the relationship with sport and its health aspect. Yes, sometimes athletes have to risk their body and push themselves to the limit. And I believe that the whole group, the whole support group needs to be on the same line with that.

What do you think of competitive pressure in the context of performance enhancing drugs?

Most will think they can achieve without using drugs, but others may become fascinated with the idea of taking a shortcut. It's really a question of moral ethics and the athlete is the one that has to choose his or her path. They need to ask themselves, What is really important and what is not? What is a true victory in sport? Is it the one in which you can really feel joy and enjoyment? Or is it just a gold medal without these ingredients? Understanding this helps to understand and control competitive pressure.

"I think we need to encourage athletes and make them think, "What is the core of sport?" There has to be joy and satisfaction, and there must be a healthy relationship. This has to start with young kids. We need to create safe and enjoyable atmospheres so kids get pleasure from sport."

But Tanja has never really retired and continues to give back to sport. Today, she is living and working in Salt Lake City (U.S.) and is a member of WADA's Athlete Committee and the International Paralympic Committee's Anti-Doping Commission.

Tanja recently shared with *Play True* her views on the importance of sport in the development of young people, as well as efforts to combat doping in sport.

As an athlete and as a hero to many young athletes, what is the most important message you want to convey?

Athletes should challenge themselves. They can be their best without drugs or doping, I know they can. They can train and give everything to sport and know they will get everything and more in return.

Athlete Committee Lends Muscle to a Stronger Fight against Doping

The thirteen members of WADA's Athlete Committee convened in Estoril (Portugal) on April 13–14, 2007, to provide their input and recommendations on the proposed changes to the World Anti-Doping Code and related International Standards.

The group was hosted by Laurentino Dias, Portuguese Secretary of State for Youth and Sport, and Committee member Rosa Mota, Olympic and World Champion in Women's Marathon.

The Committee agreed upon the following recommendations and statements:

- **Confidentiality:** The committee stressed the responsibility of organizations and individuals involved in the doping control and results management process to maintain athlete confidentiality when dealing with athlete information. Committee members stressed that athletes need to have absolute confidence in the integrity of the anti-doping system and the protection of confidential information.

- **List of Prohibited Substances:** When asked about views on the List of Prohibited Substances and Methods, the Committee supported the current policy and system for considering substances and methods for banning. Further, members noted that cannabis should always remain on the Prohibited List because it sends a strong message to athletes and youth worldwide. Committee members stressed the responsibility of elite athletes to serve as role models to youth.

- **Tougher Sanctions for Cheats:** The committee reiterated its strong stance for toughening sanctions for first-time serious doping offences. They said that sanctions need to be tougher in order to deter cheating and take cheaters out of competition. In light of the revision of the Code currently underway, they called for increasing the sanction for a first-time serious doping offence from two to four years.

- **Incentives for Cooperation with Investigations:** Also in the context of the Code revision, the Committee discussed the concept of offering incentives (such as reducing sanctions) to doping athletes for providing information and facilitating investigations into serious organized doping schemes. While the committee agreed that such a principle might be helpful to stem the scourge of doping and to catch cheaters, they urged that, out of fairness to clean athletes, such incentives should not encourage the rapid and easy return of doping athletes to competition.

- **Financial Penalties:** Committee members reiterated their desire for financial matters to be fully discussed and considered to ensure that those who are demoted in standing by a doped athlete can recover awards.

- **Whereabouts and Missed Tests:** Committee members were asked to provide their views on proposed changes to the International Standard for Testing (IST) relating to athlete whereabouts information and missed tests. Until now, rules for whereabouts and missed tests have not been dictated by the IST in order to allow flexibility to national anti-doping organizations and sports federations in setting these rules. Calls are now however been made by the international community to harmonize this part of the doping control process. As a result, proposals for the global policy have been received and drafted into a new version of the IST, which is expected to be approved by November 2007 following extensive stakeholder consultation. The Committee has submitted its feedback on the current draft proposal to the WADA's Standards & Harmonization Department for consideration during revision of the IST.

The Committee received presentations from all members showing major advances made globally in informing athletes of their responsibilities and reminding them of the need to play true. The Committee will be contributing to a special section on the WADA Web site targeted at athletes for the promotion of clean sport.

On 14 April, the Committee visited the accredited anti-doping laboratory based in Lisbon. The Lisbon laboratory is 1 of 34 laboratories worldwide that are accredited by WADA to perform anti-doping analysis under the Code.

Chaired by Vyacheslav Fetisov, Head of the Federal Agency for Physical Culture and Sport (Russian Federation), the WADA Athlete Committee consists of elite international athletes especially concerned about the prevalence of doping in sport. In working with WADA and providing input on anti-doping programs and initiatives, WADA Athlete Committee members represent the voice of clean athletes and work to help level the playing field for athletes worldwide.

WADA and Social Science Research

On 29 May 2007, WADA issued the official call for proposals for its 2008 Social Science Research Grant Program (Program). This was the fourth call for proposals since WADA first created its Social Science Research Grant Program in 2004, awarding its first grants in 2005. With education and research being among WADA's strategic objectives, the intention is that social science research will provide an evidence-based foundation for the development of education initiatives that serve the preventive aspects of WADA's fight against doping in sport as well as contributing to the existing knowledge base in the field.

To be admissible for funding under the Program, submissions must not only satisfy the Program's detailed administrative requirements, but also be related to the specific research priorities that are formulated each year by WADA's Education Committee and that the Agency sets out in the respective call. Furthermore, WADA particularly encourages collaborative research, projects with specific cultural or regional perspectives, as well as student projects.

In a first step, and provided the submissions satisfy the Program's administrative requirements, the submissions are assessed by two external peer reviewers, using weighted criteria established by WADA's Education Committee. This includes, in particular, the scientific merit of the proposed project and the degree to which the research will have substantial impact given the objectives set out in the research priorities of the Program.

In a second step, WADA's Education Committee considers the comments of the peer reviewers and makes its funding recommendations to WADA's Executive Committee. The Executive Committee makes the final decision as to the projects that will receive funding. The final step is for the selected projects to undergo ethical review by WADA's reviewers.

Since its inception, the Program has served to fund 14 research projects, initiated by researchers in regions as varied as Africa, North America, South-East Asia, Western and Eastern Europe, and Scandinavia. A couple of the funded projects have focused on topics relating to a specific sport or to athletes with disabilities, and one project consisted of a vast international literature review of research on anti-doping education and prevention programs, the beliefs and behaviours that lead to doping and the predictive and precipitating factors. Other topics have included the studies of the knowledge of and attitudes towards doping among a variety of specific populations (including among the medical profession) or specific countries or cultures, and the development of a psychometrically sound tool for assessing athletes' attitudes towards and propensity for doping.

To date, approximately six of the research projects funded under the Program have been completed and their reports are now posted on WADA's Web site. Although the Program is still young, the projects that have already been completed have yielded conclusions that tend to corroborate the preventive direction taken by current and ongoing anti-doping education activities.

Among WADA's long-term projects are the implementation and development of a central database of social science research reports on topics related to doping in sport.

WADA's Education Committee recently recommended that the Program be opened up as much as possible to accommodate research that is specific to various regions or cultures, to help generate momentum for anti-doping work in regions where few initiatives currently exist. As a first step in facilitating this development, the call for proposal documents for the 2008 Program have been published not only in English and French, but also in Spanish.

Finally, among WADA's long-term projects are the implementation and development of a central database of social science research reports on topics related to doping in sport. While this database will of course feature the reports of the projects funded under the Program, WADA also invites all of its stakeholders to submit all relevant research project reports that have already been made public for inclusion.

For more information concerning the 2008 Program please visit our Web site. To submit a research report for future inclusion in the WADA Social Science Research Database, please e-mail **info@wada-ama.org.**

Anti-Doping Goes Global with WADA Education Seminars

Learning through play: WADA's anti-doping card game introduces spirit of sport values to students in Madagascar.

In 2005, WADA piloted an Education Symposium in Montevideo, Uruguay, with the purpose of disseminating information on doping in sport, offering guidance and providing practical tools participants can use to disseminate anti-doping messages in their countries or throughout their organizations. The success of the pilot led to five multi-national Symposia being held in Europe (Moscow and Athens), Asia (Macau and Kuala Lumpur) and Africa (Cairo).

The Traveling Seminar Concept

In order to give a larger number of stakeholders the opportunity of benefiting from anti-doping education events, increase participation in such events by those involved in anti-doping education first hand and promote local collaboration in anti-doping education activities, the Symposium format has recently been replaced by the Traveling Seminar concept. During a Traveling Seminar, members of the WADA Education Department and a representative of the local WADA Regional Office (or of the relevant Regional Anti-Doping Organization) travel to two or three countries within one same region to run the Seminar activities.

The ultimate goal of the two day Seminar is to empower participants to develop and implement their own anti-doping education activities. The general objectives include providing participants with basic information on anti-doping issues and on WADA's education work, introducing participants to the Model Guidelines for Core Education and Information Programs, and engaging participants in creating a local annual and long-term plan for anti-doping education. It is intended that, at the end of the Seminar, participants will have gained a level of knowledge of and comfort with anti-doping education topics and materials sufficient to train others, help build relationships among the different actors in the region to open the doors for future joint action, and promote the sharing and communication of anti-doping education materials and policies.

Given these objectives, the Seminars include few formal presentations but instead favour small group work. These workshop-style Seminars give credence to the notion that athletes do not train in isolation and focus on the importance of educating all those who work with athletes (including coaches, health care professional, teachers, and parents) on the dangers of doping. Over the course of the Seminar, participants, representing National Sport Federations, Anti-Doping Units/Organizations, Ministry of Sport, National Olympic Committees and National Paralympic Committees, work together to establish a plan for anti-doping education.

School Activities

In parallel to the Seminar's workshop activities, the Seminars include a school component. Local education experts (representing school administrators, classroom teachers, academics, university faculty responsible for teacher training, curriculum developers and representatives from Ministries of Education, Sport and Youth) are engaged in a Focus Group session, to discuss and evaluate possibilities for the integration, within the local school system, of the curriculum from WADA's Teacher's Tool Kit. This Tool Kit contains a series of lesson plans, currently targeting teachers of students aged 10-12 years, with suggested activities for introducing the Spirit of Sport values and anti-doping messages to young people.

Finally, a classroom activity is included among the Seminar's other activities in order to observe first hand the reaction to and suitability of anti-doping education in local classrooms. The classroom activity typically involves a discussion surrounding the reasons why people are involved in sport (values), why sport is governed by rules and how cheating (whether doping or other forms of cheating) is contrary to the Spirit of Sport values. These classroom activities usually end with students playing the WADA Anti-Doping Card Game, which places students in situations in which they are either encouraged to cheat or find themselves playing with people who are not following the rules and may even have to sit out of the game because they have been "banned for life."

Looking towards the Future

The Traveling Seminar concept, along with its associated school activities, was first piloted in Nicaragua and Colombia in September 2006. A second set of Seminars were held in the Indian Ocean in March 2007 (Seychelles, Mauritius and Madagascar). Several Seminars are being planned for 2007 (Africa, Caribbean, Latin America and Oceania) and for 2008 (Latin America, Asia, Africa, Caribbean, and Eastern Europe).

Finally, in keeping with WADA's focus on positive values development for prevention purposes, modifications to the Seminar programming are regularly suggested so as to best adjust the Seminar content to local contexts, needs and resources and to encourage participants to create and implement their own, customized anti-doping programs that are based on values development.

Learning by doing: developing a plan for anti-doping education activities in Mauritius with WADA Regional Director (Africa) Rodney Swigelaar.

Seychelles Seminar participants with WDA Education Manager Jen Sclater and Education Director Julie Carter.

Third World Conference on Doping in Sport

Madrid (Spain), 15 –17 November 2007

In February 1999, the First World Conference on Doping in Sport was held in Lausanne (Switzerland) and resulted in the founding of WADA. In March 2003, a Second World Conference was held in Copenhagen (Denmark) where delegates from governments and the sport movement worldwide unanimously adopted the World Anti-Doping Code (Code) as the nucleus for the fight against doping in sport. The Code entered into force on 1 January 2004.

The years of experience since the Code's adoption have shown it to be an effective tool, and as with any living document, requires regular review. WADA has always undertaken to coordinate this work and, in mid-2006, launched a process of review on a scale similar to the consultations that led to the Code's initial adoption. The goal is to build on experience to fine-tune the Code and enhance the global fight against doping in sport. In Madrid (Spain), from 15–17 November, at the Third World Conference on Doping in Sport, delegates will discuss the proposed changes to the Code and its related standards. A revised Code will be made available to Conference delegates in October ahead of the Conference and a final Conference resolution will be submitted for adoption during the final session of the Conference.

Since its inception, WADA has made significant advances in the global campaign against doping, and will update delegates, observers and media on several of these noteworthy activities and achievements, as well as future strategies to combat doping in sport.

Registration to attend the Third World Conference on Doping in Sport is now open—deadline 15 August 2007. For additional information on the conference program, participation guidelines, registration and accommodation, please visit the official conference Web site at: **www.wadamadrid2007.com.**

Three New RADOs Established: Central Africa, Eastern Europe and South Asia

The fight against doping in sport continues to expand to new regions of the world with the establishment of three new Regional Anti-Doping Organizations (RADO).

The Central African RADO (Zone IV), launched in April 2007, is being hosted by Cameroon, whose government and National Olympic Committee (NOC) have agreed to provide office and staff to coordinate anti-doping development in the region.

Belarus will be hosting the new Eastern Europe RADO which was created in March 2007. The Belarus government and NOC have agreed to provide office and staff.

In South Asia, a new RADO was established in May 2007, and is being hosted by the Maldives, whose government and NOC will provide the office and staff, in addition to accommodations and meals for meetings held in the country.

Through the RADO program, WADA facilitates the creation of anti-doping organizations in regions of the world where there previously existed limited or no anti-doping activity. Since the launch of the RADO development program in late 2004, 101 countries have become newly active in the fight against doping in sport. The objective is for all countries of the world to be engaged by 2010.

Investigations Symposium Calls for Increased Cooperation, Development of Model Protocols for Sharing Information

WADA, with the support of UK Sport, convened an international symposium of government, sport, anti-doping and law enforcement authorities on April 16–17, 2007, in London (UK), to advance discussions on how government and sport can best coordinate efforts in the targeting of wide scale doping schemes. Attendees urged increased cooperation among multiple government and law enforcement agencies and with sports organizations to attack the more sinister elements in the doping underground.

Key themes discussed during the two-day symposium included giving law enforcement agencies the framework and tools necessary to shut down the large scale doping schemes and facilitating collaboration between law enforcement and sports authorities in their investigative work so that sport can sanction those who facilitate and profit from cheating. A working group was created at the conclusion of the talks to follow-up on strategies discussed, including the development of model protocols and guidelines for cooperation and sharing of information.

"The 'upstream' organizers of doping on a broad scale, including traffickers and members of the athlete entourage, must be held accountable," said WADA Director General David Howman. "Well-organized and well-financed individuals and groups who prey on athletes, profiting from their cheating while risking very little themselves, must be stopped. To do so requires a more unified and cooperative action among law enforcement and anti-doping agencies to shut down source and supply."

The London symposium followed on a first meeting hosted in Colorado Springs (U.S.) in November 2006 by the U.S. Anti-Doping Agency and the U.S. Olympic Committee.

New!

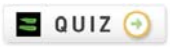
Free Educational Tool: Doping Quiz Link Program

Through WADA's "Doping Quiz Link Program," stakeholders can put the Doping Quiz on their organizations' Web sites, giving athletes and members of the athlete entourage visiting these sites a fun and interactive way to learn more about the dangers of doping and their responsibilities under the World Anti-Doping Code.

Stakeholders simply follow a few easy steps to select the Doping Quiz "Web Sticker" they prefer from several options available (see samples below), and the Doping Quiz becomes a part of the Web site, giving stakeholders another way to ensure that their athletes have the opportunity to learn about anti-doping.

The Doping Quiz, which operates in 15 languages, serves as the foundation of the Athlete Outreach Program that WADA takes to major international sporting events including the Olympics, Paralympics and many World Championships.

Visit WADA's Web site at **www.wada-ama.org** to get started!



Fourth IF Symposium Meets with Success

On March 27–28, 2007, WADA hosted its fourth annual International Federation Anti-Doping Symposium at the Olympic Museum in Lausanne (Switzerland). This symposium enables anti-doping experts from International Sports Federations (IFs) and WADA to exchange proposals for improvements, information and opinions on various issues linked to the fight against doping and its administration.

This year, so as to make the symposium as interactive as possible, emphasis was placed on case study workshops in three main areas: results management and sanctions; issues linked to the management of the fight against doping on a day-to-day basis, such as athlete whereabouts, targeted testing and Therapeutic Use Exemptions (TUEs); and how to create annual anti-doping education programs for individual IFs.

Other more traditional sessions dealt with the current revision of the World Anti-Doping Code; WADA's worldwide development program through the creation of Regional Anti-Doping Organizations; and the implementation of ADAMS, the Anti-Doping Administration and Management System created by WADA to facilitate stakeholders' day-to-day management of anti-doping activities. Following the Symposium, WADA also held a two-day ADAMS training session.

Over 80 participants representing some 50 IFs took part in the 2007 Symposium. Next year, the Symposium will be held on April 1–2, in Lausanne, in a slightly different format. On day one, WADA and the IFs will meet, while a concurrent session of the Association of National Anti-Doping Organizations will be held in another venue in Lausanne. And on day two, a joint meeting will be held for the IFs, National Anti-Doping Organizations and WADA.

WADA Program Calendar. For the most current updates, visit www.wada-ama.org

ATHLETE OUTREACH

WADA's Athlete Outreach program raises awareness and encourages doping-free sport through direct interaction with athletes at major sporting events worldwide.

July 11–23	**All Africa Games**	**Algiers, Algeria**
July 13–29	**Pan American Games**	**Rio de Janeiro, Brazil**
August 8–18	**World University Games**	**Bangkok, Thailand**
Oct. 28–Nov. 3	**UNESCO-WADA Anti-Doping Education Program for Young Athletes (Tennis)**	**Washington, DC**

INDEPENDENT OBSERVERS

The Independent Observer (IO) program helps enhance athlete and public confidence at major events by randomly monitoring, auditing and reporting on all phases of the doping control and results management processes.

July 11–23	**All Africa Games**	**Algiers, Algeria**
July 13–29	**Pan American Games**	**Rio de Janeiro, Brazil**

CODE REVIEW & CONSULTATION

The World Anti-Doping Code (Code) represents one of the most important achievements to date in the fight against doping in sport. The Code is the core document that provides a framework for harmonized anti-doping policies, rules and regulations among sports organizations and public authorities. Building on the experience gained to date and to further advance anti-doping efforts, WADA has initiated a Code consultation period, similar to that used in its development, for a practical review of its provisions and fine-tuning them to enhance anti-doping programs. The Code consultation process commenced in April 2006 and has now entered its third and final stage of consultation.

June–July	**Third Consultation Phase**	**Montreal, Canada**
October 15	**Final draft revision posted online**	**Montreal, Canada**
November 15–17	**Final draft revision submitted for adoption, Third World Conference on Doping in Sport**	**Madrid, Spain**

ANTI-DOPING PROGRAM DEVELOPMENT

WADA works with stakeholders to facilitate the establishment of strong anti-doping programs in sports and regions throughout the world. The following are meetings of various development programs, including those of Regional Anti-Doping Organizations (RADOs).

July 18–19	**West Asia RADO Project Team Meeting**	**Jordan**
August 28–29	**Eastern Europe RADO Board Meeting**	**Kiev, Ukraine**
September 4	**South East Asia RADO Board Meeting**	**Brunei Darussalam**

ADAMS TRAINING

ADAMS (Anti-Doping Administration & Management System) is the web-based database management system that coordinates anti-doping activities worldwide. WADA hosts training sessions for stakeholders adopting the ADAMS system.

September 4–5	**Lausanne, Switzerland**
September 8–9	**Bucharest, Romania**

EDUCATION TRAVELING SEMINAR

WADA's Traveling Seminars raise understanding about anti-doping efforts, disseminate general information about anti-doping in sport and offer guidance and practical tools for initiating or enhancing anti-doping education programs among WADA stakeholders throughout the world. *The dates below are subject to change. For the most current information, please contact* ***info@wada-ama.org.***

August 6–7	**Santiago, Chile**
August 9–10	**La Paz, Bolivia**
August 13–14	**Panama City, Panama**
October 17–18	**Abuja, Nigeria**
October 22–23	**Accra, Ghana**
October 26–27	**Bamako, Mali**

THIRD WORLD CONFERENCE ON DOPING IN SPORT

The deadline for registering for the Third World Conference on Doping in Sport is 15 August 2007. Visit the conference Web site at www.wadamadrid2007.com for details on registration, participation guidelines and accommodations *(see related article, p.33).*
November 15–17, 2007. *Madrid, Spain.*

WADA INFORMATION/EDUCATION SESSION

In cooperation with the Indian Ministry of Youth Affairs and Sports, WADA will host an extensive program to inform government and sport stakeholders and other interested parties from the region about the importance of the fight against doping in sport and stakeholders' respective responsibilities under the World Anti-Doping Code. **October 5–6, 2007.** *Patiala, India.*

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AN OFFICIAL PUBLICATION OF THE WORLD ANTI-DOPING AGENCY

Levelling the Playing Field

Newly-revised, a firmer and more practical World Anti-Doping Code promises to strengthen the fight against doping and bring all athletes one step closer to fairer competition.

play true

AN OFFICIAL PUBLICATION OF THE WORLD ANTI-DOPING AGENCY

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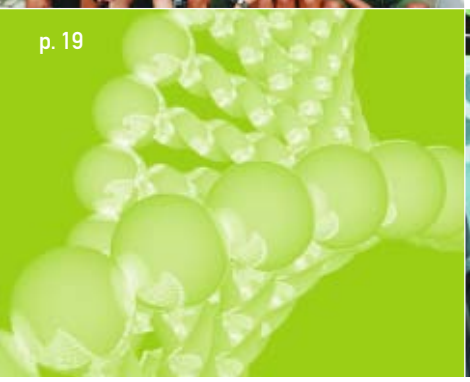

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play true Generation

An Ongoing Mission

This issue of *Play True* provides a round-up of the enhanced anti-doping rules that are to come into force on January 1, 2009, under the revised World Anti-Doping Code and its related International Standards. The revision of the rules is a major achievement for the global anti-doping community and marks a new phase in getting tough on doping.

We have come a long way since the Code's beginnings. In fact, it was just over four years ago, on the eve of the Athens Games, that all Olympic sports federations had adopted the Code. At that moment in time, the Code was agreed to and adopted, but it still remained to be seen how it would be implemented, and what the ultimate outcome would be for sport.

We can now look back over the past four years with a certain degree of satisfaction. The spate of doping cases and investigations in the lead-up to the Beijing Olympic Games are just one indication that the worldwide fight against doping in sport has made a giant leap forward. It is also an indication that the Code is a fair and effective means for rooting out doping.

As a result of the Code, for which WADA is the mandated custodian and monitor, progress in several key areas has been made.

More sports have started developing no notice out-of-competition testing programs, as required under the Code, and which are clearly the most effective of testing strategies.

Governments have become more and more involved on many different levels, including supporting robust national testing programs. Many of the positive doping cases uncovered in the lead-up to the Beijing Games are the result of nations stepping up their testing efforts to ensure that the athletes they sent to the Olympics were clean.

Testing tactics themselves have become smarter, more targeted with the experience of the past four years. Yes, one might boast that increasing the numbers of in-competition tests means that more athletes can be tested and therefore raises the likelihood of catching cheats. It certainly acts as a compelling deterrent and is a message of strong commitment for event organizers. But the real progress lies in using intelligence in targeting the tests out of competition.

We continue to close the gap on rogue science. It is a constant race, but by partnering with the pharmaceutical industry we are now able to detect some drugs even prior to their coming to market. Just one example is that of CERA, the EPO drug developed by Roche. Our ability to detect CERA during the Tour de France, a drug perceived by some doping athletes to be undetectable, was the result of a four-year collaboration with Roche to ensure that we had a detection method to find abusers at the ready as soon as the drug became available for good and proper medical care.

WADA's introduction of the strategy involving investigations and cooperation with law enforcement has helped to put the squeeze on the manufacture and trafficking of illegal doping substances. We are now finalizing our partnership with Interpol and look forward to joint initiatives.

And there has been a great deal of education of athletes and officials about their responsibilities under the Code, so that now there really is no excuse for doping.

The Code has provided the framework for these advances to occur. No doubt, without the Code, sport would be in an abysmal state today. And now, we are poised to take the next step by implementing the improvements we have agreed upon to ensure that the coming years result in even greater success at combating doping and protecting clean and safe competition.

The spate of doping cases and investigations in the lead-up to the Beijing Olympic Games are just one indication that the worldwide fight against doping in sport has made a giant leap forward. It is also an indication that the Code is a fair and effective means for rooting out doping.

Stressing Compliance

As custodian of the World Anti-Doping Code, two of WADA's over-arching priorities relate to maintaining the integrity of the Code and ensuring the proper evolution of the Code.

We maintain the integrity of the Code through assisting and monitoring stakeholders' compliance, and we ensure the proper evolution of the Code through the extensive and thorough consultation and review of the Code and its associated International Standards on a periodic basis.

Our work in these two areas ensures a worldwide harmonization of anti-doping programs which gives athletes confidence in the integrity of the anti-doping system and the fairness of competition. The key objective in such harmony is for all athletes to benefit from strong and fair anti-doping policies and protections, that are the same for all, no matter the sport, the nationality or the country where tested.

On the compliance side, for some time now we have also been actively preparing for the initial compliance report which will be submitted to WADA's Foundation Board in November, as required by Code Article 23.4. (This report will address compliance with the 2003 Code; the first compliance report for the 2009 revised Code will occur in 2010.)

In all that we do, it is our hope and aim that, by working together with our stakeholders, we will be able to help everyone achieve Code compliance, and that everyone is declared compliant in November.

The process we initiated for compliance reporting (outlined within these pages) was designed to be easy for stakeholders and involved a user-friendly online self-reporting mechanism. At the same time, WADA's standards and compliance staff have been actively assisting stakeholders who have wanted further assistance with their reporting, in addition to providing guidance on addressing compliance shortfalls.

I would like to point out that under this compliance project, both International Sports Federations and National Anti-Doping Organizations are covered.

What this means is that both sport and government are subject to compliance monitoring through WADA's Code compliance report, because within countries that have National Anti-Doping Organizations (NADOs), the primary resource of funding of the NADO is usually the national government.

Compliance is also being addressed through the Regional Anti-Doping Organization (RADO) project initiated by WADA several years ago, again engaging government finances but in addition gaining support from National Olympic Committees.

The RADO program fosters the establishment of RADOs in areas of the world where resources are limited, and therefore a joining of resources among countries maximizes their impact in combating doping. Under this model, a number of countries band together to create a RADO responsible for testing and education in the region. Since WADA launched this program in 2005, more than 120 new countries have been engaged in anti-doping programs.

These programs are established at the outset with Code-compliant rules and are guided to maintain Code compliance in their practices.

The compliance report is a critical element in worldwide anti-doping. It is a report card of sorts on how the anti-doping and sport community are doing. This is the first time it will have been issued, so there will certainly be room for improvement. However, we are confident that the class is working towards achieving high marks on behalf of clean and safe sport worldwide, and by the time our second report is due in 2010 there can be no excuses for not achieving them.

In all that we do, it is our hope and aim that, by working together with our stakeholders, we will be able to help everyone achieve Code compliance, and that everyone is declared compliant in November.

Ensuring a Level Playing Field

Revisions to World Anti-Doping Code and related International Standards come into force on January 1, 2009. More firm and practical, these amended rules promise to strengthen the fight against doping in sport for years to come and further consolidate the growing movement among established and emerging athletes to ensure fairer competition for all.

The revised World Anti-Doping Code (2009 Code) and its International Standards will mark an important new phase in the fight against doping in sport. Revisions to the Code and the International Standards are the culmination of a two-year consultation process, and promise to provide global anti-doping stakeholders with more tailored and effective tools in their ongoing efforts to confront the dopers who undermine the spirit of sport.

The Code is the core document that provides the framework for harmonized anti-doping policies, rules and regulations within sport organizations and among public authorities. Since it came into force on January 1, 2004, the Code has proven to be a very powerful and effective tool in the harmonization of anti-doping efforts worldwide. This has been demonstrated by the overwhelming support of governments and sports in adopting the Code, in addition to the growing body of jurisprudence from the Court of Arbitration for Sport (CAS) in supporting the Code's tenets.

A Constructive Harmonization

The adoption of the original Code (2003 Code) led to several significant advances in the global fight against doping in sport, including the formalization of certain rules as well as the clarification of stakeholder responsibilities. This brought about harmonization to a system where previously rules had varied, and in some cases did not exist.

Consequently, for the first time, universal criteria were set for considering whether a substance or method may be banned from use. Furthermore, the Code formalized the acceptance of the principle of strict liability for anti-doping rule violations involving the presence of a prohibited substance. The Code also formalized and allowed for the acceptance of a statute of limitations stipulating that all actions for an anti-doping rule violation must be initiated within eight years from the date in which the violation occurred.

Additionally, the Code set normative sanctions while offering flexibility to lessen or enhance bans based on circumstances of a case. It also allowed for the sanctioning of "non-analytical" rule violations, meaning that a sanction can be applied in cases where there is evidence that an anti-doping rule violation occurred but where there is no positive doping control test, such as witnessing activity or a law enforcement agency uncovering information. The Code lists the following possible violations that are not linked to the use of a prohibited substance or to its presence in a sample: using or attempting to use a prohibited substance or method; refusing, or failing without compelling justification, to submit to sample collection after

notification, or otherwise evading sample collection; violating applicable requirements regarding athlete availability for out-of-competition testing, including failure to provide whereabouts information and missed tests which are declared based on reasonable rules; tampering, or attempting to tamper, with any part of control; possession of prohibited substances and methods; and trafficking in any prohibited substance or prohibited method.

The Code also provided WADA with the right to appeal to CAS on rulings by anti-doping organizations operating under the Code—a right that WADA regularly exercises in order to ensure that sanctions for anti-doping rule violations are in accordance with the Code.

A Living Document

The Code was always intended to serve as a living document, evolving to meet the needs of an effective anti-doping program. To this end, and with the goal of enhancing anti-doping programs, WADA initiated a consultation process in 2006 for the practical review and fine-tuning of the Code's provisions. Throughout the revision process, WADA encouraged comments and suggestions that would benefit the global community of athletes, from both its stakeholders and all those who want clean and fair sport.

After an open and transparent consultation process that included three phases and the publication of several preliminary drafts, the revised Code was unanimously adopted by WADA's Foundation Board and endorsed by the 1,500 delegates present on November 17, 2007, the final day of the Third World Conference on Doping in Sport, hosted in Madrid (Spain).

Although the key principles and elements of the 2003 Code will remain in place, several important changes are reflected in the 2009 Code. Two general themes, >>

namely firmness and fairness, have emerged from these changes, both targeted at strengthening the fight against doping in sport.

WADA's stakeholders are required to implement the revisions to the Code by January 1, 2009.

Major changes

Greater Flexibility

Revisions to the Code introduce a greater flexibility in the application of sanctions in general. While this flexibility provides for enhanced sanctions, reduced sanctions are possible in particular where the athlete can establish that the substance involved was not intended to enhance performance (Article 10.5).

Increased Sanctions

The revised Code provides for an increase of sanctions in doping cases involving aggravating circumstances. These circumstances can include, but are not limited to, being part of a large doping scheme, an athlete having used multiple prohibited substances or a prohibited substance on multiple occasions, or an athlete engaging in deceptive or obstructing conduct to avoid the detection or adjudication of an anti-doping rule violation (Article 10.6). Aggravating circumstances also include situations in which a normal individual would be likely to benefit from the performance-enhancing effects of the anti-doping rule violation(s) beyond the otherwise applicable period of ineligibility.

While the original Code allowed for a four-year ban for a first serious anti-doping rule violation only in cases of trafficking or administration of a prohibited substance or method, the revised Code thus broadens the spectrum of anti-doping rule violations that can lead to a four-year ban for a first serious doping offence.

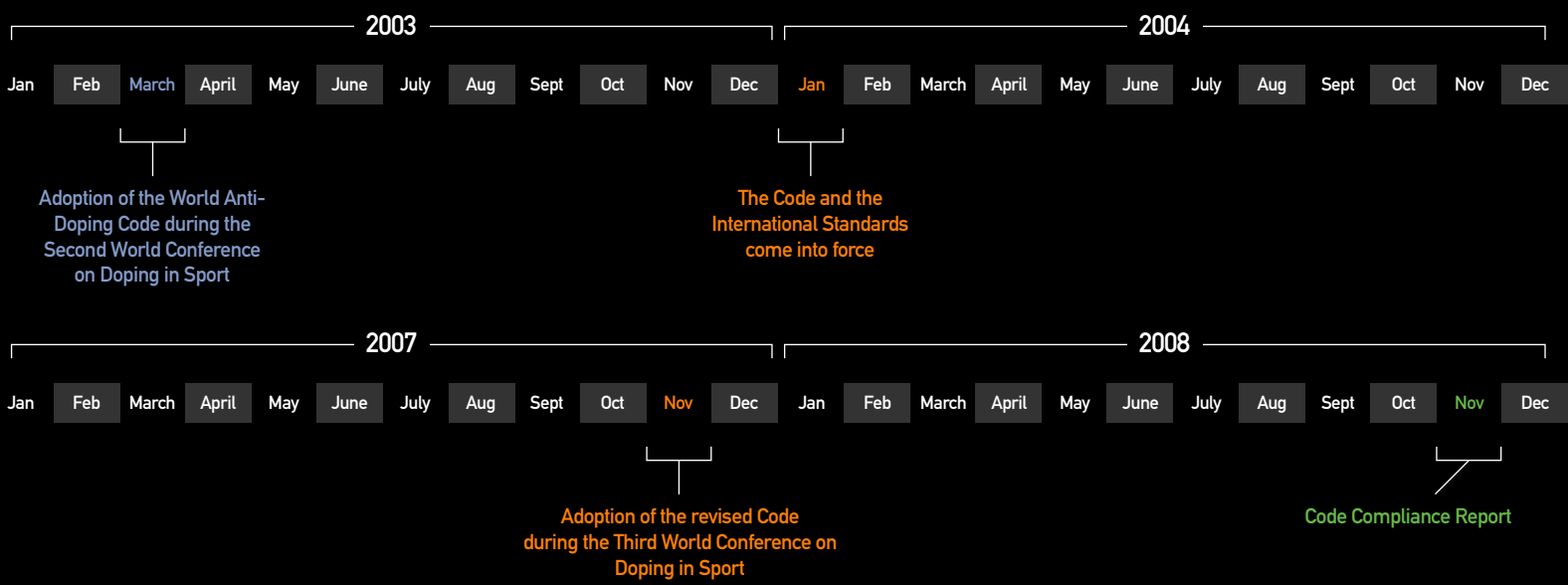
It further clarifies the range of sanctions that can be applied in the case of a second infraction, based on the type of violation, as outlined in Article 10.7.

Specified Substances

Given the mentioned flexibility, the definition of "specified substances" will change when the revised Code comes into force (Articles 4.2.2 and 10.4).

While all prohibited methods, the classes of anabolic agents and hormones, as well as stimulants, hormone antagonists and modulators so identified in the 2009 Prohibited List maintain their status, the remainder of prohibited substances will now be considered as specified substances for the purpose of more flexible sanctions. This means that where athletes can clearly establish how a specified substance entered their body or came into their possession, and that such substance was not intended to enhance sport performance, the

The Code: A Journey through the Years



sanction may be reduced as low as a reprimand and no period of ineligibility.

At the same time, the use of non-specified substances should be more likely to result in a standard two-year ban for a first anti-doping rule violation, or to a ban of up to four years in cases of aggravating circumstances under the revised Code.

Specified substances, as defined in the revised Code, are not necessarily less serious agents for purposes of doping than other prohibited substances. For that reason, an athlete who does not meet the reduction criteria could receive up to a four-year period of ineligibility in case of aggravating circumstances. However, there is a greater likelihood that specified substances, as opposed to non-specified substances, could be susceptible to a credible, non-doping explanation.

Greater Harmonization

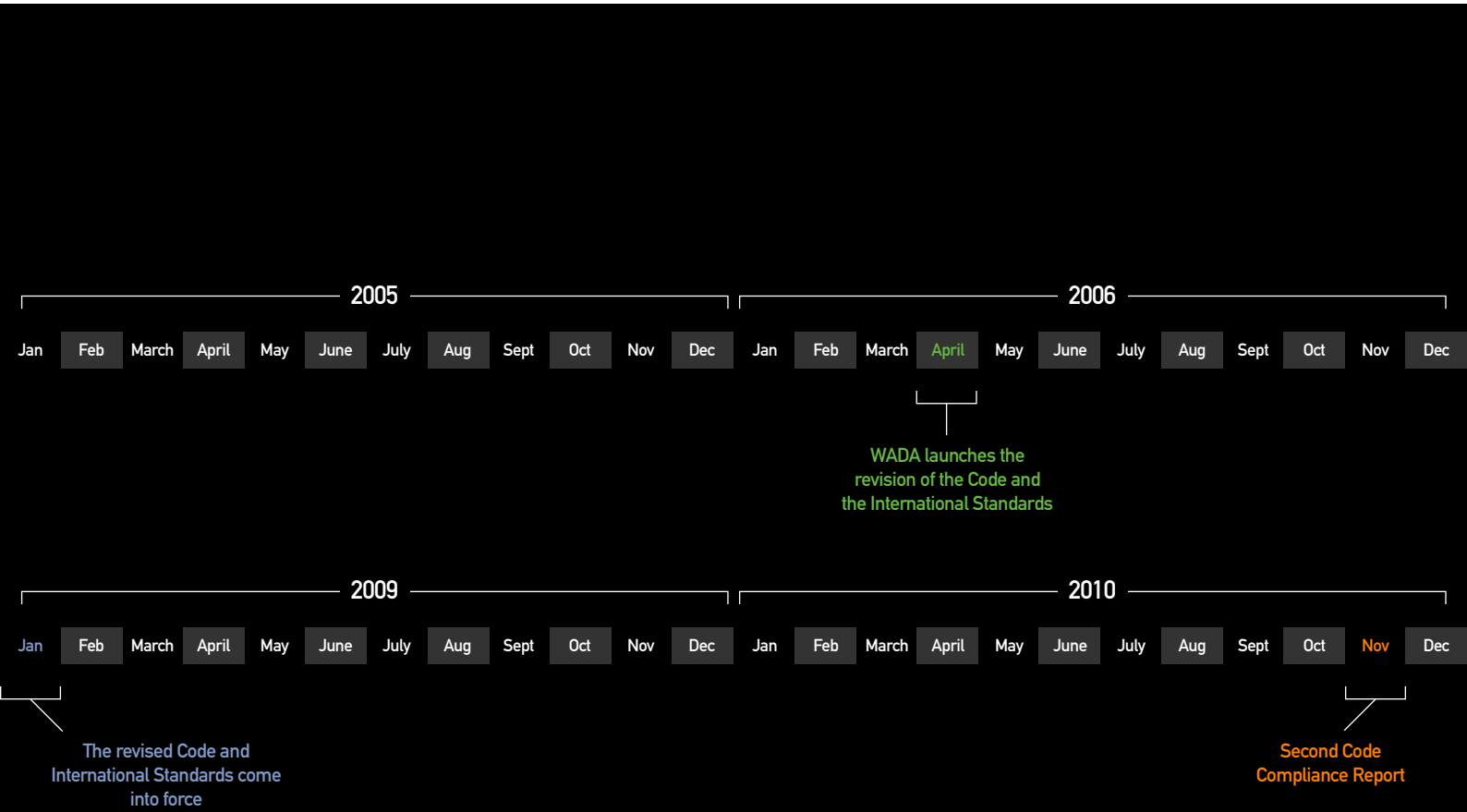
Changes to the Code bring greater harmonization in areas where stakeholders had initially wanted flexibility and were given such latitude in the original Code.

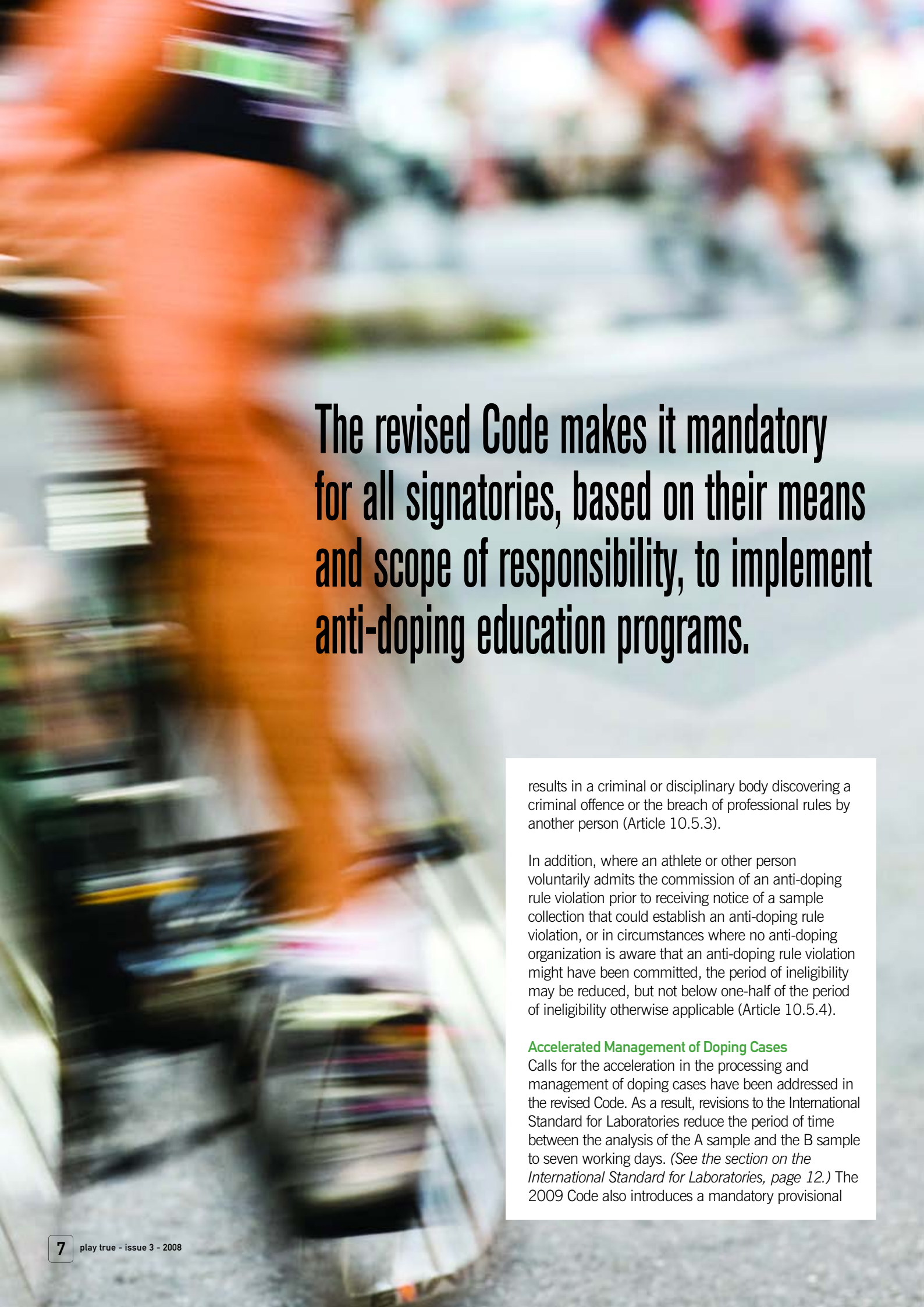
For example, while the 2003 Code left it up to the anti-doping organization to determine the number of missed tests that should lead to an anti-doping rule violation, this rule was harmonized and made mandatory as part of the Code review. The 2009 Code now provides that any combination of three missed tests and/or failures by an athlete to provide accurate whereabouts information within an 18-month period shall constitute an anti-doping rule violation (Article 2.4). *(See the section on the International Standard for Testing, pages 10-11.)*

There is also greater harmonization in the application of sanctions for this type of infraction. While the original Code allowed for sanctions ranging from three months to two years, the revised Code sets the period of ineligibility at a minimum of one year to a maximum of two years, based on the athlete's degree of fault (Article 10.3.3). The goal in reducing the amount of flexibility in this area is to reinforce consistency while allowing the panels judging the cases to take into account all the circumstances of the individual cases.

Incentives to Come Forward

Incentives to come forward have also been strengthened. The potential extent of the suspension of an ineligibility period (one-half of the otherwise applicable ineligibility period in the current Code) was enhanced to three-quarters of the otherwise applicable ineligibility period in the revised Code, for substantial assistance to an anti-doping organization, criminal authority or professional disciplinary body which results in the anti-doping organization discovering or establishing an anti-doping rule violation by another person or which >>





The revised Code makes it mandatory for all signatories, based on their means and scope of responsibility, to implement anti-doping education programs.

results in a criminal or disciplinary body discovering a criminal offence or the breach of professional rules by another person (Article 10.5.3).

In addition, where an athlete or other person voluntarily admits the commission of an anti-doping rule violation prior to receiving notice of a sample collection that could establish an anti-doping rule violation, or in circumstances where no anti-doping organization is aware that an anti-doping rule violation might have been committed, the period of ineligibility may be reduced, but not below one-half of the period of ineligibility otherwise applicable (Article 10.5.4).

Accelerated Management of Doping Cases

Calls for the acceleration in the processing and management of doping cases have been addressed in the revised Code. As a result, revisions to the International Standard for Laboratories reduce the period of time between the analysis of the A sample and the B sample to seven working days. *(See the section on the International Standard for Laboratories, page 12.)* The 2009 Code also introduces a mandatory provisional

suspension following an A sample adverse analytical finding for a prohibited substance other than a specified substance. Anti-doping organizations can decide to impose a provisional suspension following an adverse analytical finding for a specified substance or other anti-doping rule violation (Article 7.5).

Atypical Findings

As provided for in the Prohibited List and the revised International Standard for Laboratories, the amended Code introduces the concept of "atypical findings" (Article 7.3). Laboratories are directed to report the presence of a prohibited substance, which may also be produced endogenously, as an atypical finding, which is subject to further investigation. Upon receipt of an A sample atypical finding where a review by the anti-doping organization responsible for the results management does not reveal an applicable therapeutic use exemption or that a departure is the cause for the atypical finding, the anti-doping organization will conduct the required investigation. Upon completion of the investigation, the athlete and other anti-doping organizations (including WADA) will be notified whether or not the atypical finding will be brought forward as an adverse analytical finding.

WADA's Right of Appeal

The revised Code also clarifies WADA's right to appeal directly to CAS any case in which an anti-doping organization fails to render a decision with respect to whether an anti-doping rule violation was committed within a reasonable deadline, as if the anti-doping organization had rendered a decision finding no anti-doping rule violation (Article 13.3).

Financial Sanctions

The 2009 Code does not preclude anti-doping organizations from providing, in their own rules, for financial sanctions against cheaters, in addition to the period of ineligibility or other sanction imposed (10.12). This being said, no financial sanction shall justify a reduction in a period of ineligibility or other sanction normally outlined in the Code. Furthermore, as a condition of regaining eligibility after being found to have committed an anti-doping rule violation, the athlete must first repay all prize money forfeited.

Right to Comment on Erroneous Information

Whereas the original Code did not authorize anti-doping organizations and WADA accredited laboratories to comment publicly on a case, except for describing the process and science in a general way, the amended Code allows them to react to public comments attributed to an athlete, athlete representatives or to other concerned individuals (Article 14.2.5). This new clause allows anti-doping organizations and WADA accredited laboratories to correct erroneous or false information being circulated in the public domain concerning a pending case.

Mandatory Education Programs

The 2009 Code makes it mandatory for all signatories, based on their means and scope of responsibility, to implement anti-doping education programs (Article 18.1).

UNESCO Convention

The revised Code stipulates that, in accordance with the UNESCO International Convention against Doping in Sport, the International Olympic Committee will only accept bids for the Olympic Games from countries where the government has ratified, accepted, approved or acceded to the UNESCO Convention and where the National Olympic Committee (NOC), National Paralympic Committee (NPC) and National Anti-Doping Organization (NADO) are in compliance with the Code (Article 20.1.8).

Starting on January 1, 2010, International Federations and Major Games Organizers will do everything possible to only award World Championships or major games to countries where the government has ratified, accepted, approved or acceded to the UNESCO Convention and where the NOC, NPC and NADO are in compliance with the Code (Articles 20.3.10 and 20.6.6).

International Standards:

Key Changes

Concurrent to the Code review process started in 2006, WADA launched a process for updating the International Standards, which first came into force in 2004 along with the Code. The purpose of the Standards is to harmonize different technical aspects in the fight against doping, including testing, the List of Prohibited Substances and Methods (revised annually), laboratory activities, and Therapeutic Use Exemptions (TUEs).

WADA also created a new International Standard (the International Standard for the Protection of Privacy and Personal Information) in order to ensure that anti-doping organizations protect personal information provided by athletes and their support personnel as part of the anti-doping process in an appropriate fashion.

The International Standards are mandatory for Code signatories. The revised or new Standards will come into force at the same time as the revised Code (2009 Code) on January 1, 2009.

International Standard for Testing

The International Standard for Testing (IST) provides structure and guidance for the planning of effective testing, and the maintenance of the integrity and identity of samples, from athlete notification to the delivery of samples to the laboratory for analysis.

The revision of the IST was done over four phases of consultation, with the final version being approved by WADA's Executive Committee on May 10, 2008.

The revised IST (2009 IST) includes new clauses addressing establishing a registered testing pool (RTP) and the management of athlete whereabouts information, which is essential to no-notice out-of-competition testing. The 2009 Code and the 2009 IST include greater harmonization in areas where stakeholders had initially indicated a desire for flexibility, which was in fact part of the initial Code.

The IST review process identified a pressing need to create a standard set of whereabouts requirements, applicable to all sports, and setting out definitively: (1) what whereabouts information must be filed; (2) what constitutes a missed test; and (3) when and how Anti-Doping Organizations (ADOs) should recognize missed tests declared under the rules of other ADOs. Provisions were made for these requirements in the 2009 Code and therefore reflected in the 2009 IST, outlining: (1) how many filing failures/missed tests, committed over what period, would constitute an anti-doping rule violation under Article 2.4; and (2) what sanctions should be applied for such violations. *(See the section on Greater Harmonization, page 6.)*

Whereabouts Information and Missed Tests

The feedback received from stakeholders on the IST regarding whereabouts matters ranged from: (1) requiring athletes to provide whereabouts and be available for testing 24 hours a day, seven days a week (so that an athlete could in theory be held liable for a missed test if he or she could not be found at any time); to (2) specifying particular times of the day for testing during which, if the athlete is not available, the ADO may declare a missed test.

The solution found in the revised IST requires athletes who are included in an ADO's RTP to: (1) provide whereabouts, and be subject to testing 24 hours a day, seven days a week, 365 days a year; (2) provide residential, training and competition information, as well as an overview of regular activities, and plans for travel; (3) submit quarterly whereabouts information, and regular updates; and (4) specify one hour each day (between 6 a.m. and 11 p.m.) during which they can be located at a specified location for testing. This does not limit the time in which an athlete may be tested; he or she may still be tested at any time, 24 hours a day. But, to mitigate the difficulty in accounting for one's whereabouts 24 hours a day one quarter in advance, the athlete's exposure to the risk of a missed test is limited to the 60-minute time-slot each day.

As well, the potential for declaring filing failures under Article 2.4 (Whereabouts information), Articles 2.3 (Evading sample collection) and 2.5 (Tampering with any part of the doping control, including providing fraudulent information to an ADO) of the revised Code can be used to pursue athletes seeking to evade the system outside the 60-minute time-slot.

Registered Testing Pool

Only those athletes identified in their ADO's RTP are subject to whereabouts provisions set out in the revised IST. Provisions regarding whereabouts responsibilities and missed test accountability identified in the IST apply only to those athletes who are at highest risk for out-of-competition doping. International Federations (IFs) are afforded discretion as to who should be subject to these provisions based on a risk assessment they have made in their sport. National Anti-Doping Organizations >>

(NADOs) are afforded discretion to create a RTP that will support an effective out-of-competition testing program at the national level.

Mutual Recognition

Under the amended IST, Code signatories must inform WADA and other relevant ADOs of missed tests and whereabouts failures they have declared against athletes, preferably through ADAMS (the Anti-Doping Administration & Management System developed by WADA). The other ADOs with jurisdiction over the athlete must recognize those decisions. If they fail to do so, WADA can intervene by way of appeal.

Team Sports

A number of team sports suggested that there are inherent differences between team sports and individual sports that would allow a modified whereabouts requirement for team sports.

In order to recognize these characteristics, the 2009 IST has now included a special section (11.5) which confirms that: (1) RTPs in team sports can be defined by reference to teams (so that it is some or all of the players on a particular team or teams who are in the RTP); (2) much of the whereabouts information filed for players on those teams will be collective "team activity" information; and (3) it is therefore likely that those filings will be made by team officials on a collective basis rather than by players on an individual basis.

However, to maintain equal treatment for all athletes, players in team sports are not exempt from the standard whereabouts requirements set out above. As is the case for an athlete in an individual sport, an athlete in a team sport will be notified of a missed test if he or she is not where the team official said he or she would be during the 60-minute time-slot. The liability ultimately resides with the athlete and therefore will not be excused of his or her responsibilities by blaming the team for filing inaccurate information about his or her whereabouts.

Volume of Urine Required

While the original IST required that at least 75 mL of urine be collected for each doping control sample (pouring 50 mL in the A sample bottle, and 25 mL in the B sample bottle), the minimum volume required became 90 mL in the revised IST (pouring 60 mL in the A sample bottle, and 30 mL in the B sample bottle).

The increase in volume required specifically responds to requests made by laboratories to ensure that enough urine is available to analyze for the growing number of prohibited substances and where longitudinal follow-up requires a greater volume.

Prohibited List

WADA's List of Prohibited Substances and Methods (List) specifies which substances and methods are banned in- and out-of-competition, as well as an addendum providing for the banning of alcohol and beta-blockers in specific sports. The List is revised, and updated on an annual basis by WADA, following an extensive consultation process, and is approved by the WADA Executive Committee during its September meeting.

The 2009 List was approved by the Executive Committee on September 20, 2008, and published a few days later. It will come into force on January 1, 2009. The 2009 List offers a number of changes compared to the 2008 List, including modifications in relation to specified substances in order to align the 2009 List with the more flexible sanctions set forth in the revised Code.

As a result, while all prohibited methods, the classes of anabolic agents and hormones, as well as stimulants and hormone antagonists and modulators so identified on the 2009 Prohibited List maintain their status, the remainder of prohibited substances will now be considered as specified substances for the purpose of more flexible sanctions. This means that where athletes can clearly establish how a specified substance entered their body or came into their possession, and that such substance was not intended to enhance sport performance, the sanction may be reduced as low as a reprimand and no period of ineligibility. At the same time, the use of non-specified substances will be more likely to result in a standard two-year ban for a first anti-doping rule violation, or to a ban of up to four years in cases of aggravating circumstances under the revised Code.

In order to determine which stimulants (prohibited in-competition only) should be classified as specified or non-specified in the 2009 List, the international experts serving on WADA's scientific committees carefully considered various parameters, including : (1) the potential of these stimulants to enhance performance in sport; (2) their risk to health; (3) their general use in medicinal products; (4) their legitimate market availability; (5) their illicit use; (6) their legal/controlled status in various countries; (7) their history and potential of abuse in sport; (8) their potential of addiction; (9) the likelihood of approval for therapeutic use; (10) their pharmacology, and other scientific elements; as well as (11) the likelihood of a non-doping explanation.

As a result of this process and of the broad consultation traditionally carried out as part of the annual preparation of the List, stimulants identified as non-specified

substances in the 2009 List (and therefore subject to a two-year sanction in the absence of aggravating or attenuating circumstances) include for example amphetamine, cocaine, bromantan and modafinil.

Other noteworthy changes to the 2009 List compared to the 2008 List include the removal of alpha reductase inhibitors, a class of masking agents which used to be banned in- and out-of-competition. These substances have been rendered ineffective as masking agents of steroids through close consideration of steroid profiles by WADA accredited anti-doping laboratories.

As part of the development by WADA of the Athlete Passport concept—the objective of which is to monitor an athlete's biological parameters over time in order to detect abnormal variations that could indicate potential doping—and following research and advances in anti-doping science, WADA accredited laboratories are now able and required to systematically and closely consider steroid profiles in urine as part of the doping control process, which allows them to circumvent the masking agent properties of alpha reductase inhibitors.

International Standard for Laboratories

The purpose of the International Standard for Laboratories (ISL) is to ensure the production of valid test results and evidentiary data and to achieve uniform and harmonized results and reporting from WADA accredited laboratories.

The ISL underwent a revision process with a new version coming into force on January 1, 2008. Changes included the requirement that the B sample analysis take place no later than seven working days after reporting the A sample results in order to expedite the results management procedure. In addition, the quality of the laboratories' routine analyses is now taken into account in the annual reaccreditation procedure managed by WADA, thereby enhancing the evaluation process carried out throughout the year by WADA.

A new version of the Standard (2009 ISL) was approved by the Executive Committee during its September 20, 2008 meeting and will come into force on January 1, 2009. This revised Standard includes several technical amendments which serve to harmonize the ISL with provisions of the 2009 Code.

A notable change from previous versions of the ISL to the 2009 ISL is the abandonment of the clause that required different analysts to perform the A and B sample confirmation. WADA's experts considered that the current WADA accreditation requirements, which conform to international standards for quality, ensure the necessary levels of technical competence and professional ethics to guarantee the integrity of the samples, the validity of the procedures and their analytical results.

International Standard for Therapeutic Use Exemptions

The main purpose of the International Standard for Therapeutic Use Exemptions (ISTUE) is to ensure that the process of granting Therapeutic Use Exemptions (TUEs) is harmonized across sports and countries.

Athletes, like all others, may have illnesses or conditions that require the use of particular medications. If the required medication includes a substance that happens to fall under the WADA Prohibited List, then a TUE may give that athlete the authorization to take the needed medication.

The ISTUE states that all IFs and NADOs must have a process in place whereby athletes with documented medical conditions can request a TUE, and have such request appropriately dealt with by a panel of independent physicians. IFs and NADOs are responsible for granting or declining such applications.

The ISTUE underwent several phases of consultation, with the final revised version approved by the Executive Committee at its September 2008 meeting in order to harmonize its provisions with the revised Code and the 2009 Prohibited List.

Generally speaking, feedback received indicated that the principles and the philosophy of the TUE procedure are well accepted and considered useful. The revisions only concern the Abbreviated TUE process (as opposed to the Standard TUE), primarily due to the administrative workload it generates for ADOs. The revised ISTUE (2009 ISTUE) addresses these concerns by eliminating the concept of the Abbreviated TUE.

Asthma (inhaled Beta-2 agonists and inhaled Glucocorticosteroids)

The revised ISTUE, which takes into consideration stakeholder feedback and current medical perspectives, such as the International Olympic Committee Consensus on Asthma issued in February 2008 (calling for strict control of use of these drugs by athletes), is based on the premise that, for the process to be manageable while at the same time deterrent enough for elite athletes, different requirements can be requested of athletes depending on their level of competition (international or national). All athletes needing to use inhaled Beta-2 agonists and inhaled Glucorticosteroids for asthma >>

must have a medical file and must declare use of these substances in ADAMS and on the doping control form.

For international-level athletes:

- Athletes who are part of an international registered testing pool (IRTP) need an approved Standard TUE for asthma prior to using the substance.
- For athletes who are not part of an IRTP but are taking part in an international event, it is at the discretion of the IF either to deliver a TUE prior to the event or to provide a retroactive TUE in case of an adverse analytical finding (AAF). The granting of a retroactive TUE must comply with the criteria set forth in the revised ISTUE, particularly with regards to the athlete having an existing and current medical file.

For national-level athletes:

- It is at the discretion of the NADO either to approve the TUE or to provide a retroactive TUE in case of an AAF.

In either case, all athletes may request a TUE if they wish to do so.

Non-Inhaled, Non-Systemic Glucocorticosteroids (GCS)

In the case of non-inhaled, non-systemic GCS, the athlete must provide a minimum declaration that includes the diagnosis, the substance taken, and contact information of the medical doctor who administered the treatment. It is at the discretion of the ADO to ask for more than this minimum declaration. For topical use of GCS, neither a TUE nor a declaration is requested.

International Standard for the Protection of Privacy and Personal Information

The 2009 Code calls for an additional International Standard: the International Standard for the Protection of Privacy and Personal Information (ISPPPI).

When performing obligations under the Code, ADOs may collect, store, process, or disclose personal information relating to athletes and third parties. The purpose of the ISPPPI is to ensure that all relevant parties involved in anti-doping in sport apply minimum suitable privacy protection in relation to the collection and use of personal data, such as information relating to whereabouts, doping control, and TUEs.

WADA led an extensive consultation process among legal experts, international organizations and the commissions on privacy protection from different countries in the development of this Standard.

The ISPPPI, approved by the Executive Committee on September 20, 2008, formalizes ADO obligations to comply with applicable data protection and privacy laws with respect to their handling of such information. It also serves to ensure that athletes and non-athletes are fully informed of, and where necessary, agree to the handling of their personal information in connection with anti-doping activities arising under the Code.

2009 Code and International Standards on WADA Web site

The 2009 World Anti-Doping Code and its revised International Standards can be consulted under the "2009 Code Implementation" section of WADA's Web site: www.wada-ama.org.

Code Compliance:

First Official Report in November

As custodian of the World Anti-Doping Code, two of WADA's over-arching priorities relate to maintaining the integrity of the Code and ensuring its proper evolution.

The integrity of the Code is maintained by assisting with and monitoring stakeholders' compliance. WADA ensures that the Code evolves by engaging in extensive consultation and thorough review of the Code and its associated International Standards on a periodic basis.

The key objective in such harmony is for all athletes to benefit from rules that allow a more effective fight against doping, and that are the same for all, no matter the sport, the nationality or the country where tested, all while rigorously respecting athletes' rights.

While WADA is assisting stakeholders to ensure they implement the revisions to the Code by January 1, 2009, WADA has also been actively preparing for the initial compliance report which will be submitted to the Agency's Foundation Board in November of this year, as required by Code Article 23.4. (This report will address compliance with the 2003 Code. The first compliance report for the 2009 revised Code will occur in 2010.)

One has to remember that the International Olympic Committee (IOC) amended its Charter following the approval of the Code in 2003 so that adoption and implementation of the Code by the Olympic Movement is mandatory and that the IOC has the power of excluding non-compliant sports from the Olympic program.

The Athens Games were the first under the Code—with all Olympic sports having accepted it prior to those Games. Since then, WADA has been working with its stakeholders to ensure that the Code is implemented into their rules and that they are enforcing these rules in accordance with it.

The Code Belongs to Stakeholders

The Code belongs to WADA stakeholders and the Agency's role is to assist them in respecting it.

WADA has therefore drafted Model Rules to facilitate the implementation of the Code by its stakeholders. The Agency also reviews signatory anti-doping rules to ensure that they are Code compliant and, where this is not the case, offers assistance to remedy the situation. Another strategy implemented by WADA to assist stakeholders is the Agency's work in helping to establish Code-compliant anti-doping organizations through Regional Anti-Doping Organizations (RADOs) around the globe.

It is the Agency's aim that, by working directly with its stakeholders in these and other ways, WADA is able to help everyone achieve compliance with the 2003 Code and that everyone is declared compliant in November 2008.

Compliance Report Process and Implications

WADA initiated the reporting process two years ago by developing an online reporting tool for stakeholders to provide their compliance information. WADA provided its Executive Committee and Foundation Board with several interim reports, starting in September 2006.

A first official report will be considered by the WADA Foundation Board at its meeting in November 2008. The Code states that stakeholders who have jurisdiction to impose sanctions on those who are deemed non-compliant, such as the IOC, may do so. The Code also states that the imposition of sanctions by such ruling bodies (not WADA) for non-compliance may be appealed to the Court of Arbitration for Sport.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Beijing 2008

As with previous Games, WADA played an active role during the Beijing Olympic and Paralympic Games. While the International Olympic Committee (IOC) and International Paralympic Committee (IPC) shouldered the anti-doping duties during their respective Games, WADA programs in Beijing included participating in the pre-Games testing team and operating Independent Observer and Athlete Outreach Programs.

The IOC was responsible for **doping controls** at the Olympic Games, and worked with the Organizing Committee (BOCOG) to conduct testing at Olympic venues. However, members of WADA's management worked with the IOC to help carry out an intensive pre-Games testing program. Under the WADA-managed out-of-competition testing program, athletes were also tested during the period of the Olympic Games outside of Olympic venues, for example in cases where athletes stayed outside of the official Olympic sites or who arrived at the Games late or left early. WADA also worked in direct collaboration with the IPC to ensure that an effective pre-Games testing program was conducted for the Paralympic Games.

To help enhance athlete and public confidence in anti-doping activities, WADA's **Independent Observer** (IO) teams randomly monitored all phases of the doping control and results management processes of the Olympic and Paralympic Games. Individuals serving on WADA IO teams are experts in fields pertinent to anti-doping and are recruited from around the globe. Reports from the Olympic and Paralympic Games, which include a summary of IO observations and recommendations, are available on WADA's Web site (www.wada-ama.org).

Interacting with athletes during the Olympic and Paralympic Games is another essential activity in the fight against doping in sport. WADA's **Athlete Outreach Program** was present at the Athlete's Village during both Games. Several thousand athletes and their entourage visited WADA's Outreach Center, situated next to the athletes' dining hall, to play WADA's Anti-Doping Quiz. This interactive and unique computer game, available in 19 languages, allows participants to test their anti-doping knowledge. WADA had an >>


















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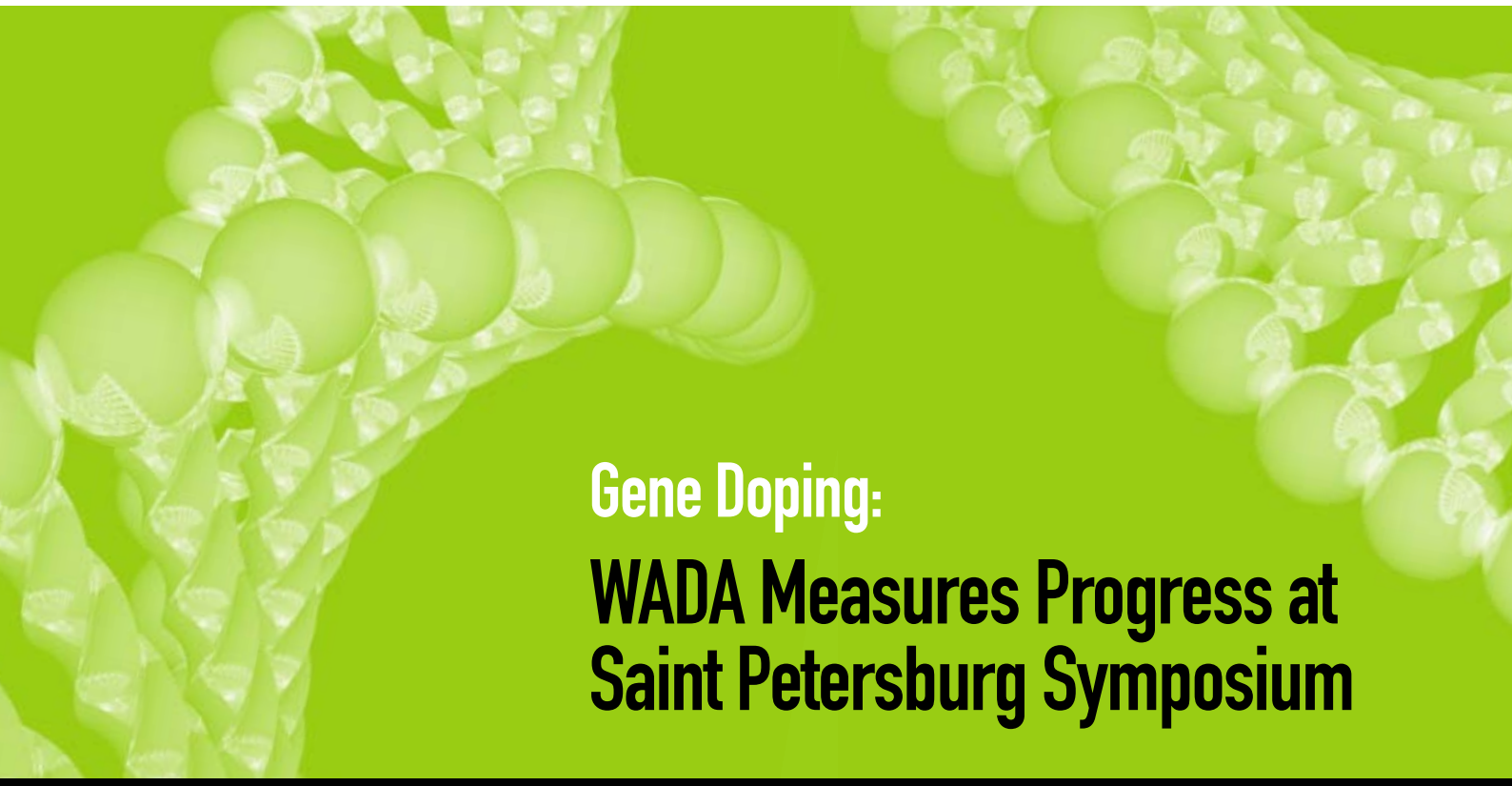
international and diverse team of anti-doping experts on hand to speak with athletes and answer any questions they had about the dangers and consequences of doping.

During the Beijing Games, participants who scored at least nine-out-of-ten on the Quiz were awarded a symbolic gift, which added to the popularity of the program. The Asian-inspired, black and green Play True hat and Lenovo sponsored USB key, containing anti-doping information, quickly became popular in the Athlete's Village.

During the Games, WADA's **Executive Team** met with many of the Agency's stakeholders. In particular, WADA's President, the Hon. John Fahey, addressed the Session of the IOC and, together with WADA's Director General David Howman, spoke to the Commonwealth Sports Ministers meeting.

Finally, as was the case during the 2006 Winter Paralympic Games in Turin, the IPC used **ADAMS**—the Anti-Doping Administration and Management System developed by WADA—to manage all testing activities prior to and during the Beijing Paralympic Games. *(See the article on ADAMS, page 33.)* While WADA and other anti-doping organizations used ADAMS to coordinate whereabouts information and to facilitate out-of-competition testing prior to the Olympic Games, those responsible for testing during the Paralympic Games used ADAMS to coordinate all pre- and during-Games testing activities as well as for on-site results management. The WADA accredited laboratory in Beijing also used ADAMS to report test results during the Paralympic Games.

For more information concerning WADA's role at the Beijing Games, please consult Issue 2 - 2008 of *Play True*, available on WADA's Web site.



Gene Doping:
WADA Measures Progress at Saint Petersburg Symposium

Gene doping represents a threat to the integrity of sport and the health of athletes. As the international organization responsible for promoting, coordinating and monitoring the global fight against doping in sport in all its forms, WADA is devoting significant resources and attention to identifying ways to detect and deter gene doping.

WADA held its Third Gene Doping Symposium on June 10 and 11, 2008, in Saint Petersburg, with the support of the Russian sport authorities.

The Saint Petersburg Symposium, which followed those held in Banbury, United States, in 2002 and in Stockholm, Sweden, in 2005, gathered more than 60 participants from 16 countries and included experts in gene transfer, scientists from the field of anti-doping, representatives from sports and public authorities, and ethicists.

This follow-up meeting allowed for an update on advances in gene transfer therapies and in the development of detection methods for its potential misuse in sport. Furthermore, participants discussed the boundaries between therapy and enhancement from technical and ethical perspectives, as well as law enforcement issues and legal frameworks relating to gene doping.

In particular, participants called for a greater awareness of and strengthened action against the

The Saint Petersburg Symposium, which followed those held in Banbury, United States, in 2002 and in Stockholm, Sweden, in 2005, gathered more than 60 participants from 16 countries and included experts in gene transfer, scientists from the field of anti-doping, representatives from sports and public authorities, and ethicists.

potential abuse of gene transfer in sport. They also called for a greater interaction among the sport community, professional scientific organizations, licensing agencies and clinical research oversight bodies, resulting in an increasing awareness of the potential illicit use of gene transfer techniques for enhancement purposes, as well as the development of appropriate sanction mechanisms for illegal or unethical application of gene transfer in sport.

"Most experts do not think that gene transfer is being misused by athletes yet, but we know that there is a growing level of interest in the sports world in the potential for gene doping, and that scientists working on potential genetic cures for muscle diseases or blood disorders are being approached by sports figures to inquire about the use of genes to enhance performance in sport," said WADA's Vice President Prof. Arne Ljungqvist. "We need to make sure that athletes know the dangers associated with these technologies, and, for those who may choose to ignore them and cheat, that they will be caught."

Participants agreed on a number of **key conclusions and recommendations**:

Dangers Associated with Gene Transfer

Gene therapy is a reality, albeit an imperfect one. The tools of gene transfer have proven to be effective in a number of clinical studies, including the treatment of, among other diseases, severe combined immunodeficiency diseases (SCID), several forms of cancer, genetic forms of retinal degeneration and blindness. Nevertheless, serious conceptual and technical problems continue to produce severe and unanticipated setbacks, including death and the induction of leukemia in some patients.

WADA's Research Program

The vigorous research program instituted and funded by WADA has led to significant progress towards a better understanding of the genetic and physiological effects of doping as well as identifying scientifically rigorous methods for more effective detection of pharmacological and gene-based doping. Scientific progress made through WADA supported research projects, which were summarized at the conference, suggests that new detection methods are likely to emerge and will help to prevent tainting sport by gene doping.

The WADA research program should continue to stimulate efforts in the development of detection methods for gene doping from both academic and private institutions. WADA will also continue to interact with academic and private sectors, and professional scientific and medical organizations to monitor developments >>

WADA's Athlete Committee Chairman Vyacheslav Fetisov

in genetic enhancement technologies in order to serve as a catalyst for public and scientific awareness, and public discussion of the potential benefits and dangers of gene-based doping.

Broader Societal Issues

Many forms of medicinal and surgical techniques used for the enhancement of normal human traits are an accepted and growing practice for physical and mood modification. The financial and personal rewards associated with improved performance indicate that sport will be one of the areas in which gene-based enhancement is likely to first arise. The world of sport therefore serves as a very effective setting in which to examine broad societal issues of personal enhance-ment and the unclear boundary between treatment and enhancement.

Legal and Ethical Safeguards

In addition to its traditional activities with governments, WADA is actively developing relationships with international police and anti-crime organizations to ensure that national and international laws penalize uncontrolled or illegal possession, commercialization and trafficking of prohibited substances and methods, including reagents for genetic manipulation. In most countries, and consistent with the Helsinki Declaration, all genetic manipulations in human subjects and patients require extensive regulation and oversight at institutional, local and national levels. Illicit application of gene transfer technology in sport is unlikely to comply with such standards. It is therefore important that procedures are identified in order to develop legal and ethical safeguards to deter and to counter such uses of genetic technology.

WADA is committed to the safe use of genetic technology and that all activities comply with international ethical standards of human experi-mentation. The Agency will therefore intensify its interactions with govern-mental authorities, law enforcement, policy agencies and licensing authorities to ensure that any departure from the accepted oversight and approval procedures constitutes professional misconduct and that suitable sanctions are devised.

Commercialization of Genetic Science

The commercialization of and worldwide market for genetic science are affecting the accessibility of materials and methods of potential use in genetic doping by sport figures. In order to identify the emergence of future doping agents or methods, WADA should facilitate interactions with public and commercial authorities. Furthermore, WADA should mobilize governments, sport authorities, and the private, scientific and medical sectors to answer the need to regulate the promotion and dissemination of genetic enhance-ment technologies in the global marketplace. Finally, anti-doping organizations should provide athletes, coaches and physicians with objective, reliable information enabling them to critically assess claims made on the Internet, and elsewhere, regarding the "power of genetics" to enhance athletic performance.

WADA's Vice President Prof. Arne Ljungqvist

WADA's Director General David Howman

"Issues associated with gene transfer are multiple and complex," said WADA's Director General David Howman. "By gathering top experts in various fields related to genetic enhancement, this fruitful symposium helped address them and further advance strategies to detect potential misuse of these technologies. WADA will continue to devote significant resources and attention to this specific area, to protect the integrity of sport and the health of athletes."

"This symposium was very encouraging," added Prof. Theodore Friedmann, Head of WADA's Gene Doping Panel (a group of international experts that advises WADA on gene therapy, the methods for detecting doping, and the research projects funded by WADA in this area). "While detection methods are early in their development, I have no doubt that the ongoing work will catalyze public discussion and awareness in this field and that WADA will continue to be the leading agency in the application of modern molecular genetics and DNA technology to the development of improved methods for detection."

Additional information regarding gene doping and the Saint Petersburg Symposium, the presentations and official Symposium Declaration can be consulted from the Science and Medicine section of WADA's Web site: www.wada-ama.org.

Dr. Thomas Murray:

Significant Uncertainties

Thomas H. Murray, PhD, is President of The Hastings Center (USA), the world's first research institution devoted to bioethics. Dr. Murray chairs WADA's Ethical Issues Review Panel and was formerly the Director of the Center for Biomedical Ethics in the School of Medicine at Case Western Reserve University in Cleveland, USA. He is the author of many publications and has been part of many panels of experts on issues relating to ethics, bioethics, science, and doping in sport. A key presenter and moderator at WADA's Third Gene Doping Symposium, Dr. Murray shares some thoughts on the ethical issues associated with the topic of gene doping in this interview with *Play True*.

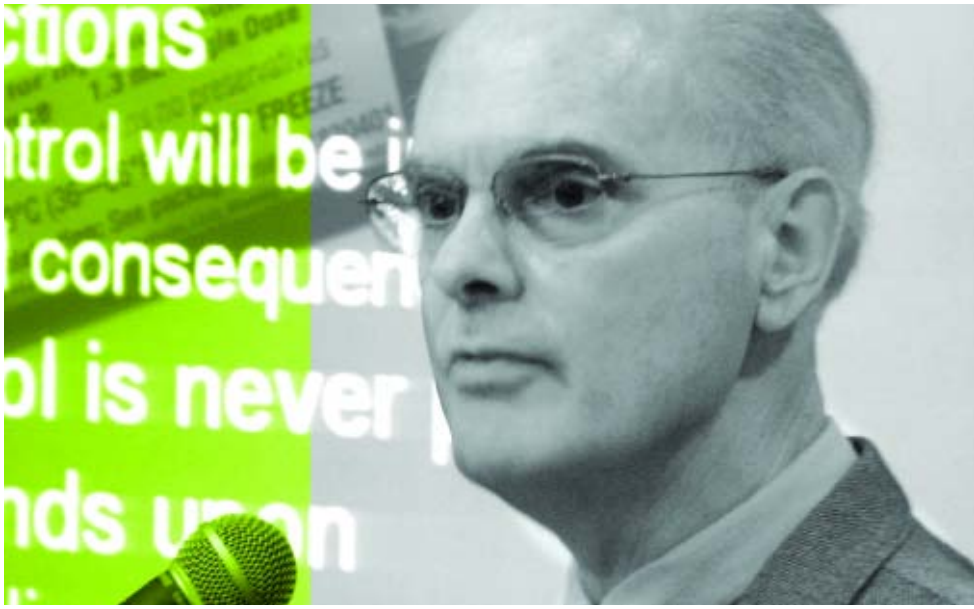
Play True: What key ethical issues does the potential misuse of gene transfer raise?

Thomas Murray: First of all, the scope of the risks that some athletes may want to take by undergoing genetic modifications, and the level of danger involved, would be greater than with "traditional" doping. The technology of gene transfer for therapeutic purposes is not fully mastered yet. There is a much greater level of uncertainty involved. Secondly, there is a risk of launching an arms race with such a potential abuse of technology. This would be contrary to all that sport is about and a profoundly mistaken approach. The glory of sport is learning what we can do with the natural talents we have, perfecting them through human excellence, persistent effort and dedication, and not with artificial enhancement and engineering.

But how can we determine what is acceptable or not?

We need to go back again to a key question: What is sport about? What contributes to its beauty and its value? What gives sport its meaning? I don't want my children or grandchildren to have to go through genetic enhancement to compete on a level playing field.

Sport is not a competition between surgeons or engineers. It is a competition in which athletes show their abilities based on the body they have. Athletes of course try to perfect their talent, and they can do it through a variety of authorized means including continuous progress of sport science in the development of training methods and other techniques. Talent can be perfected through what I call a virtuous circle: take your natural talents and make the most of it.



Should this message be further emphasized?

I think the message is definitely out there. The fact that WADA has taken the lead by organizing three symposia on gene doping and continuing to provide objective and balanced information is encouraging. But I also think that people need to take a deep breath and realize that gene doping is not for tomorrow. There is more hype than reality at the moment. Gene transfer techniques are still very immature, and the first therapeutic successes date from just a few years ago. Discussions on gene doping should be encouraged but kept away from scary movie scenarios and remain based on reality, which is that gene transfer is still a very experimental technique.

Dr. Thomas Murray published an article in *Play True* Issue 3 · 2007 on "Ethics, Enhancement and Sport" supporting the fight against doping. All issues of *Play True* can be found on WADA's Web site: www.wada-ama.org.

Dr. Mark Frankel:

Averting Social Injustice

Mark Frankel, PhD, has been a Director of the Scientific Freedom, Responsibility and Law Program at the American Association for the Advancement of Science (AAAS) since 1990. He develops and manages the AAAS's activities related to professional ethics, science and society, and science and law. As part of the AAAS's contribution to WADA's Third Symposium on Gene Doping, Dr. Frankel gave a presentation on the commercialization of gene doping in sport (available on WADA's Web site). *Play True* met up with him in Saint Petersburg to solicit his thoughts on the potential implications of genetic enhancement on sport and on society in general.

Play True: Why did the AAAS decide to partner with WADA for the Saint Petersburg Gene Doping Symposium?

Mark Frankel: The AAAS represents all the sciences in terms of membership. We are really interested in increasing public understanding of science and responding to and anticipating public policy issues. Genetic enhancement raises some very interesting policy issues. It seems to me that the field of enhancement is very broad and that you need to focus on one area. Sport is a field that is quite appropriate for discussing enhancement and its implications. WADA has been a pioneer in this discussion and the AAAS saw this symposium as a great opportunity.

I think enhancement in general has a lot of appeal to people. Living longer, jumping higher, enhancing the mind. These perspectives have appeal to human beings, and the question is: How are our societies going to deal with these issues? Sport is an excellent kind of microcosm of how enhancement plays out in the real world, because we are further here than we are in any other social endeavours.

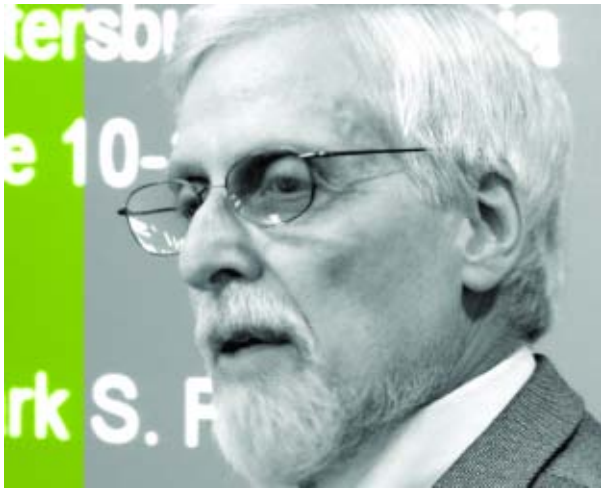
What are the most significant potential implications of genetic enhancement on society?

The biggest issue of genetic enhancement, whether it relates to sport or not, is the risks associated in terms of health for the individual, but also in terms of social injustice. Another issue is: What are the social values that we want to promote if we embrace enhancement? How do we want our society to incorporate any type of enhancement into what it values and how it operates? Those are some of the big social issues and all of them have some relevance to sport.

But how can we determine what is acceptable or not in a society that already accepts a number of enhancements (plastic surgery, etc.)? And where do we draw the line in sport between therapy and enhancement?

This issue is a critical one and one that has to be the focus of a lot of public discussion. I don't have a simple answer for that. But the question is a very interesting one: What is the process by which any country considers where the line has to be drawn? Traditionally, we have in place democratic processes in many of our countries, whereby we try to do the best we can. Science and technology are always a critical and complex area in terms of where we draw the line. We need to continue to bring to the dialogue a variety of stakeholders, from physicians to consumers, judges, policy-makers, members of the sports community. This needs to be an ongoing dialogue. But at some point we will either have to make a conscious decision about where we draw the line or the marketplace is going to make this decision for us. We have seen this in the United States on a number of issues where the government has been reluctant to establish policies for whatever reasons and the market has taken over and basically led the evolution of the technology and how it is applied.

With respect to sport, anybody interested in this issue needs to think very carefully about it and remember that enhancement is inconsistent with the spirit and ethics of sport. Every social enterprise has an ethics, whether it is banking, law, accounting, etc. Sport itself has a very strong ethical foundation. Sport needs to continue to make a case that enhancement is inconsistent with its ethics.



In this regard, WADA has an important role to play to facilitate and catalyze the discussion, and educate those involved in sport about this issue. AAAS could bring its own experience of dealing with policy issues and how we can move from a discussion involving groups of different disciplines and backgrounds, to a process generating outcomes such as strong recommendations aimed at various audiences, including professional, commercial and not-for-profit organizations.

A True Champion
Frank Fredericks

How do you define a champion? Google the name Frank Fredericks, simply Frankie to his friends and family, and you will gain a greater insight into the meaning of this word. One of the greatest sprinters of all time, this 41-year-old Namibian won two silver medals (100m and 200m) at the 1992 Barcelona Olympic Games and 1996 Atlanta Olympic Games respectively. After a distinguished career he retired after competing at the 2004 Athens Olympic Games.

Elected during the 2008 Olympic Games to serve as the President of the International Olympic Committee (IOC) Athlete Commission, Frank also serves on the IOC Executive Board and is in charge of taking the voice of the athlete to the core of the IOC's decision-making body.

Frank is the ideal person to be that voice having served as a competitive athlete, athlete ambassador and now athlete leader. *Play True* recently interviewed him.

Play True: What was the best bit of advice you received while growing up?

Frank Fredericks: Stay in school and get your education. Education is the key that would open the doors to a bright and successful future.

Frank or Frankie?

I have no preference but my mother calls me Frankie. In Afrikaans, Frankie is a younger version of Frank. In my mother's eyes, I will always be her little boy and thus Frankie.

Who was your role model and why?

My mother was a single parent. She taught me to strive for the best and to recognize the beautiful things around me and in others.

Do you have a favourite sporting memory?

I have a lot, but if I have to mention one, it will be the experience at the Olympic Games in Barcelona. Starting with carrying the flag for Namibia at our first Olympic Games and the two Olympic silver medals (100 and 200m) won in Barcelona in 1992. They were the first Olympic medals for me but above all for my country, Namibia, newly independent.

You were elected to the IOC Athletes' Commission in 2004 and to the Chairmanship of the Commission at the 2008 Olympic Games. What will be your primary objective in this leadership role?

I will rely on my fellow athletes for guidance to ensure that the voice of the athletes stays up-to-date and active in the IOC and that we remain constant in the fact that the Olympic Games are for athletes.

All together, we will continue to support and strengthen the IOC's fight against doping by promoting its zero-tolerance philosophy, because it is athletes who cheat but also athletes who are cheated on.

Another topic I would like to push is the promotion of education throughout an athlete's entire sporting career.

What role do you believe both current and retired athletes should play in the anti-doping movement?

Who better to speak out and act on that topic than the athletes themselves? It is the athletes who cheat and it is the athletes who are cheated on by unfair competitors. As athletes we have to take an active role in the fight against doping, which will be a priority under my leadership.

As an athlete ambassador and role model around the world, but especially in Africa, what programs or initiatives could best enhance anti-doping awareness?

When I finished my sporting career, I decided to go through the African continent to share my experience with younger people. Since 1999, through the Frank Fredericks Foundation, we have been trying to make a difference to help young Namibian athletes achieve their goals in life, teaching them at the same time how to do sport while respecting themselves and the others—their rivals, coaches, referees, etc.

In our modern society, to get kids aware of the dangers of doping, we have to find the right mix between traditional and modern means, i.e. using school books or comics; radio or television programs, music, etc. and, at the same time, organizing interactive lectures from athletes, coaches and doctors. Communication is the key point.

Track and Field (athletics) has suffered recently due to high-profile athletes testing positive or being

proven to have cheated in their event. What are your feelings related to this and the future of track and field?

I am happy to see that the testing is working and we need to continue to be one step ahead of the cheats. Despite track and field's image suffering, they should not stop testing and testing and testing.

Both in-competition and out-of-competition testing is necessary for elite athletes who want to compete on a level playing field. Do you have any insight or words of wisdom about doping control to give to athletes competing today?

If you have nothing to hide, just fill out your whereabouts and let the authorities know where you are. We have a responsibility to young people to let them know that taking part in sport is a wonderful life experience.

WADA was created in 1999 and has made significant progress over the past few years. How do you see the growth of WADA in the short and long term as it relates to cleaning up sport?

As I said earlier, we will always be committed to a policy of zero tolerance regarding doping. Since 1999, a lot of work has been done in this respect by WADA and the IOC to create an environment of clean sport for generations.

I think that about 99.9 per cent of athletes are clean, so we have to make sure that we keep the playing field level. I am very happy with the many tests that were performed before and during the Beijing Games. We are telling the cheats there won't be a possibility to cheat anymore. It is the integrity—and the very future—of sport which is at stake.

The IOC and WADA are putting increasing emphasis on youth and a future generation of champions. What words of advice would you give young athletes, aiming to compete at the top of their sport, about training, hard work and competitive values?

Always respect yourself and others. Forget about drugs, steroids, growth hormones and all that rubbish. An athlete's route to success is littered with sacrifices. There will be many highs and lows along the way.


The Guide
Athletes and Medallists
Opening Ceremony


MULA/TAMAT


play true

Malaysia Adopts WADA's Athlete Outreach Model

Submitted by the Anti-Doping Agency of Malaysia

Malaysia is deeply committed to the fight against doping in sport and wants to play a strong role in the world anti-doping movement to take the battle against doping to the next level. Efforts are currently being made to improve Malaysia's anti-doping strategy which is consistent with their zero tolerance for doping in sport.

In May 2007, Malaysia launched its national anti-doping agency, calling it Anti-Doping Agency of Malaysia (ADAMAS). The mission of ADAMAS is **PURE PERFORMANCE** with a goal to make sure all athletes practice clean sport.

Malaysia and ADAMAS both recognize the importance of education. Recent educational activities include conducting seminars and programs on anti-doping in sport to every athlete competing at major sporting events including the Olympic, Paralympic, Asian and Southeast Asian Games.

ADAMAS adopted WADA's Athlete Outreach Model and successfully completed its first program at the Malaysian National Games from May 31 to June 9, 2008. Considered their "mini-Olympics," the National Games are held every other year and involve over 6,000 young, up and coming athletes.

With a mobile unit that allowed both flexibility and a targeted reach within every sport, the ADAMAS team was able to set up its Outreach Program at over ten venues, with a variety of anti-doping resources translated in both English and Malay.

"We believe that two way interaction is always better than one and for that reason the outreach program at our National Games was very successful," said Nazima Kassim, Sports Officer with ADAMAS. "We plan to run the program again in the future using WADA's Anti-Doping Quiz in Malay and will continue to meet as many athletes and personnel as possible in promoting clean sport."

The Play True Generation
at the Commonwealth Youth Games

The Play True Generation is WADA's latest education program which encourages young athletes, their coaches and support personnel to be leaders in promoting and ensuring clean sport.

It is a generation who believes that clean sport is one of the fairest and most powerful tools for positive change and growth. It embraces fair play and respect.

WADA launched the program during the Third Commonwealth Youth Games, held October 12–18, 2008, in Pune, India. During the Games, athletes visiting the Play True Generation Center in the Athlete Village demonstrated their commitment to the ideals of the Play True Generation by taking the youth edition of WADA's Anti-Doping Quiz, by completing a survey and by pledging to Play True. Athletes also had the opportunity to play the "Mario & Sonic at the Olympic Games" video game, provided by WADA's partner digital media and content company ISM.

WADA's Director General David Howman welcomed ISM's partnership: "ISM knows how to make learning captivating and fun. We have an important mandate and by working with a company like ISM we are confident that today's and tomorrow's leaders will want to join the Play True Generation."

In addition to WADA personnel, the Play True Generation Center was staffed by Regional Anti-Doping Organization (RADO) Administrators from Commonwealth countries. The RADO Administrators, Neil Murrell (Caribbean), Valerie Onyango (Africa Zone V), Natanya Potoi (Oceania) and Joel Libombo (Africa Zone VI), whose offices are funded by the Commonwealth Secretariat, were present to share their expertise with the hundreds of athletes, coaches and sport officials who passed through the Center.

The Commonwealth Secretariat's support to the anti-doping activities in East Africa, Southern Africa, the Caribbean and Oceania is primarily focused on the education and information side of anti-doping. Following the Games, the goal of each of the RADO Administrators is to promote and deliver sustainable programs for youth in their respective regions.

The success of and lessons learned during this first Play True Generation event will be a springboard for preparations for the first Youth Olympic Games, to be held in Singapore in August 2010.

play true Generation

UNESCO Convention Nears 100 Ratifications

The International Convention against Doping in Sport is setting records of its own as it continues at full pace toward rapid ratification. Unanimously adopted at the 2005 UNESCO General Conference and coming into force in February 2007, the treaty has now been ratified by more than half of UNESCO's 193 Member States–the fastest pace thus far for any UNESCO Convention.

The UNESCO Convention–the first universal treaty against doping in sport–is the practical instrument by which governments formalize their commitment to the fight against doping. Given that many governments cannot be bound by a non-governmental document such as the World Anti-Doping Code (the document harmonizing anti-doping rules in all sports and all countries), the Convention permits governments to align their domestic policies with the Code, thus harmonizing the rules governing anti-doping in sport and public legislation.

WADA is in regular contact with UNESCO and those governments that have yet to ratify the Convention in order to facilitate and encourage its rapid ratification.

In addition, the revised Code, which was unanimously endorsed by delegates from sport and government at the Third World Conference on Doping in Sport in November 2007, states that, starting in 2009, the International Olympic Committee will only accept bids for the Olympic Games from countries where the government has ratified the Convention and where the National Olympic Committee (NOC), National Paralympic Committee (NPC) and National Anti-Doping Organization (NADO) are in compliance with the Code. Furthermore, the revised Code calls on International Federations and Major Games Organizers, starting on January 1, 2010, to do everything possible to only award World Championships and Major Games to countries where the government has ratified the Convention and where the NOC, NPC and NADO are in compliance with the Code. *(See also the highlight of key changes to the Code page 3.)*

UNESCO Publishes Handbook for Fund for the Elimination of Doping

UNESCO has published a handbook outlining the application process for and management of the Fund for the Elimination of Doping in Sport. The Fund is dedicated to assisting governments with the implementation of effective anti-doping programs in accordance with the International Convention against Doping in Sport

State Parties that have ratified the Convention can apply to use the Fund—made up of contributions from Member States, private or public bodies and individuals, as well as revenue from fundraising activities, to establish anti-doping preventative education programs—for assistance with policy advice to enable the development of legislation and regulations for the purposes of complying with the Convention, and for mentoring and capacity development activities.

The Handbook, available in six languages, can be downloaded from UNESCO's Web site: www.unesco.org/en/antidoping.

WADA President Confers with Top Sport and Government Officials

In the past few months, WADA's President, the Hon. John Fahey, held fruitful meetings with a number of top sport and government officials from around the world to discuss issues of common interest.

In June, Mr. Fahey and WADA's Director General David Howman visited the President of the International Olympic Committee (IOC) Jacques Rogge and the new President of the International Court of Arbitration for Sport Mino Auletta in Lausanne.

They subsequently traveled to Brussels to meet with Jan Figel, the member of the European Commission responsible for education, training, culture and youth, and by extension sport.

Lastly, they traveled to Paris for individual discussions with the UNESCO Director General Koïchiro Matsuura, the Chairman of the Russian State Committee for Physical Culture and Sport Vyacheslav Fetisov (also a WADA Board member and the Chairperson of the Conference of Parties to the UNESCO International Convention against Doping in Sport), and the French State Secretary for Sport and WADA Board member Bernard Laporte.

During the Beijing Olympic Games, Mr. Fahey also met with sport and government officials from around the world. He addressed the Session of the IOC and the Commonwealth Sports Ministers meeting held in Beijing.

The meetings and presentations included discussions of general doping issues, advances in the fight against doping in sport, cooperation between sports and public authorities, management of doping cases, the UNESCO Convention, and updates on WADA's investigations strategy, including cooperation with Interpol.

The Hon. John Fahey and Jan Figel

1948 Olympic Champion Shows Support to WADA

André Laperrière, a Montrealer and member of the 1948 Canadian Olympic ice hockey team, gave WADA a replica of the shirt he and his teammates were wearing when they won gold at the Winter Olympic Games in Saint-Moritz, Switzerland, to show his support for the fight against doping in sport.

During a ceremony at WADA's Montreal headquarters in October, Mr. Laperrière presented the jersey to WADA and stressed the importance of the Agency's role in protecting the integrity of sport and the health of young athletes. "I am very pleased to give my jersey to WADA to show my support to your wonderful mission," said Mr. Laperrière. "The use of doping substances by athletes is not only unfair to other competitors, but also very risky to their health."

RADO Development Continues

Regional Anti-Doping Organizations (RADOs) continue to develop in each of their 15 respective regions of the world, fulfilling different responsibilities for each of the 122 countries involved. RADO activities range from the coordination of sample collection, to the management of results, appeals, approval of therapeutic use exemptions, to the dissemination of education/information materials, as well as assisting member countries with the establishment of anti-doping regulations compliant with the World Anti-Doping Code.

The Commonwealth Secretariat continues to support the employment of four RADO Administrators and to provide an education grant to each of these four regions (East Africa, Southern Africa, the Caribbean, and Oceania). In addition, WADA recently signed an agreement with the Conférence des Ministres de la Jeunesse et des Sports des États et Gouvernements ayant le français en partage (CONFEJES) whereby CONJEJES has agreed to provide financial support in assisting French-speaking countries involved with the RADOs.

New Corporate Video Outlines WADA's Mission, Global Responsibilities

In the lead-up to the Beijing Olympic and Paralympic Games, WADA developed a new corporate video outlining the Agency's mission and its global responsibilities in thefight against doping in sport.

This two-minute video is available in English and French in WADA's online media center at www.wada-ama.org.

More and More Organizations Use ADAMS

WADA's Web-based Anti-Doping Administration & Management System (ADAMS) continues to progress well.

As of mid-September 2008, 85 anti-doping organizations were using ADAMS, including 50 International Federations and 35 National Anti-Doping Organizations.

During the third quarter of 2008, 20 WADA accredited laboratories used ADAMS for reporting Proficiency Test (PT) results. The remaining accredited laboratories will be using ADAMS to report their PT results starting on October 1, 2008.

Individual athlete statistics show that close to 98,000 athlete profiles have been logged. The number of athletes holding their own accounts for reporting whereabouts and therapeutic use exemptions (TUEs) is over 15,000, with nearly 8,000 TUEs being submitted via ADAMS.

The Olympic Council of Asia used ADAMS at their Asian Beach Games, held in Bali from October 18-26, 2008.

Revisions to the International Standard for Testing will be incorporated in the next release of ADAMS, which will be operational on January 1, 2009.

WADA Calendar

WADA Program Calendar. For the most current updates, visit www.wada-ama.org

EDUCATION SEMINAR

WADA's Education Seminars raise understanding about anti-doping efforts, disseminate general information about anti-doping in sport and offer guidance and practical tools for initiating or enhancing anti-doping education programs among WADA stakeholders throughout the world. For more information, contact info@wada-ama.org.

October 22–23	Costa Rica

ANTI-DOPING PROGRAM DEVELOPMENT

WADA works with stakeholders to facilitate the establishment of strong anti-doping programs in sports and regions throughout the world. The following are meetings of various development programs, including those of Regional Anti-Doping Organizations (RADOs).

October 21	Central America & Colombia RADO Board Meeting	Costa Rica
October 21–23	Eastern Europe RADO Board Meeting, TUE and Results Management Training	Baku, Azerbaijan
November 6–8	West Asia RADO Board Meeting, TUE and Results Management Training	Amman, Jordan
November 10–12	Gulf States & Yemen RADO Board Meeting and Results Management Training	Doha, Qatar
November 11–14	Africa Zone IV RADO Board Meeting and DCO Training	Gabon
November 16–17	Africa Zone I RADO Board Meeting	Morocco

MEDIA SYMPOSIUM

WADA's Media Symposium is an opportunity for interested journalists to receive updates about the Agency's work and mission, as well as the advances and the challenges in the fight against doping in sport in general. For more information, contact media@wada-ama.org.

February 24, 2009	Lausanne, Switzerland

ADAMS TRAINING

ADAMS (Anti-Doping Administration & Management System) is the Web-based database management system that coordinates anti-doping activities worldwide. WADA hosts training sessions for stakeholders adopting the ADAMS system.

At the present time, no group training sessions are scheduled. If there is sufficient demand and one is scheduled, it will be posted in the "ADAMS" section of WADA's Web site. Individual one-on-one remote online sessions on specific modules are offered regularly. To schedule a session, contact adams@wada-ama.org.

Definitions: Anti-Doping Terms

The following document includes definitions of anti-doping terms included in this Tool Kit. It could either simply be used as a teacher resource or distributed to students. The definitions included have been modified from the official WADA definitions to better suit your and your students' needs.

For more definitions as well as to consult WADA's official wording, please refer to the following section of WADA's Web site –

- World Anti-Doping Code (Appendix 1) – http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=250
- International Standard for Testing – http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=371
- Athlete Guide – http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=449
- Anti-Doping Glossary – http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=708

Definitions

Adverse Analytical Finding: A report from a laboratory that identifies the presence of a prohibited substance or evidence of the use of a prohibited method in a sample.

Anti-Doping Organization: An organization that is signatory to the World Anti-Doping Code that is responsible for adopting rules for initiating, implementing or enforcing any part of the doping control process. This includes, for example, the International Olympic Committee, the International Paralympic Committee, other major event organizations that conduct testing at their events, WADA, International Federations, and National Anti-Doping Organizations.

Athlete Support Personnel: Any coach, trainer, manager, agent, team staff, official, medical, paramedical personnel, parent or any other person working with, treating or assisting an athlete participating in or preparing for sports competition.

Doping: Doping does not only refer to an athlete using a prohibited (banned) substance or method. It also includes:

- Possession of a prohibited substance and/or method;
- Interfering with the testing process;
- Not providing information, or providing inaccurate information, about when and where they will be, or not being present at a location indicated; and
- Encouraging and assisting others to dope.

Definitions

Doping Control: All steps in the testing process. Anti-Doping Organizations, athletes and WADA accredited laboratories have responsibilities within this process.

Anti-Doping Organizations	Athletes	Laboratories
- Test planning - Collection of whereabouts information - Sample collection and handling - Approval of therapeutic use exemptions - Results management - Organization of hearings	- Provision of whereabouts information - Provision of a sample(s) - Apply for therapeutic use exemptions - Request hearings/appeals	- Laboratory analysis - Reporting of results

National Anti-Doping Organization (NADO): The organizations designated by each country as being the primary authority and responsibility for all aspects of anti-doping at the national level.

Prohibited List (List): The document that identifies the substances and methods that are prohibited (banned). Any substance or method that is included on the List must meet 2 out of the following 3 criteria:

1. Potential to enhance sport performance;
2. Potential health risk to the athlete;
3. Violates the Spirit of Sport.

Sample: Urine or blood which is collected during a doping control session.