



OLYMPIC COACH

SPORT PERFORMANCE DIVISION

TeamUSA.org

Winter 2012



Seven Lessons Learned from
Zatopek

Building Better Performance
through Applied Science:
How NGBs and Universities
can Work Together

The Role of Stretching in
Exercise Performance and
Injury Risk

USA Rugby's 'Rookie Rug-
by' Wins IRB Development
Award

Marriage of Sports Skills
with Athletic Ability Devel-
opment Through Seamless
Integration

'One Stop Shopping':
Dartfish as a Complete Video
Analysis Platform

Comfort is Key to Coaching
Young Athletes



**SPORT
PERFORMANCE**

United States Olympic Committee

Board of Directors

Robert Bach
James Benson
Larry Probst, Chairman
Bob Bowlsby
Ursula Burns
Anita DeFrantz
James Easton
John Hendricks
Nina Kemppel
Jair Lynch
Susanne Lyons
Mary McCagg
Dave Ogreaan
Michael Plant
Angela Ruggiero
Scott Blackmun, CEO (non-voting)

Chief Executive Officer

Scott Blackmun

Editors

USOC Coaching Education Department
Christine Bolger 719.866.2551
Christine.Bolger@USOC.org

Publisher

United States Olympic Committee
Coaching Education Department
1 Olympic Plaza
Colorado Springs, Colorado

Olympic Coach is a publication of the United States Olympic Committee Sport Performance Division/Coaching Education Department. Readers are encouraged to submit items of interest for possible inclusion. Submitted materials will be acknowledged, but cannot be returned and inclusion is not guaranteed. Materials should be sent to Christine Bolger at Christine.Bolger@USOC.org.

Olympic Symbols, marks and terminology are reserved for the exclusive use of the USOC under 36 USC 22506.

This publication is copyrighted by the U.S. Olympic Committee and contents may not be reproduced without permission.

Contents

- 5.....Seven Lessons Learned from Zatopek
E. Paul Roetert, Ph.D., AAHPERD
Peter Haberl, Ed.D., USOC
- 10.....Building Better Performance
through Applied Science: How NGBs and Uni-
versities can Work Together
Sam Callan, USA Cycling
Kristen Dieffenbach, West Virginia University
- 15.....The Role of Stretching in Exercise
Performance and Injury Risk
Ian McMahan, M.A., ATC, PES
- 18.....USA Rugby's 'Rookie Rugby' Wins IRB
Development Award
- 19.....Marriage of Sports Skills with
Athletic Ability Development Through Seamless
Integration
Ken Kontor, Performance Conditioning Inc.
- 24.....'One Stop Shopping' – Dartfish as a
Complete Video Analysis Platform
Scott Riewald, Ph.D., CSCS, USOC
David A. Ramos, US Tennis Association
- 30.....Comfort is the Key to Coaching Young
Athletes
Michael Nyitray, 2010 National Developmental Coach
of the Year

Message from the
Chief of Sport Performance
Alan Ashley



Happy New Year! What better way to kick off an Olympic year than by releasing the first issue of *Olympic Coach* magazine. On July 27th the world will be focused on London and Great Britain as thousands of volunteers welcome delegations from more than 200 nations to the Games of the XXXth Olympiad and on August 29th welcome delegations from more than 145 nations to the 14th Paralympic Games.

The USOC staff - in collaboration and partnership with teams from each of our National Governing Bodies - has been on the ground working to refine their preparation plans so that athletes and coaches competing in over 300 events will have the best possible chance to succeed. Olympic qualifying has begun, and our athletes are competing at championships and competitions for the opportunity to represent themselves, their friends and families, and the United States and to be part of Team USA. The ground work has been done, now it's time to prepare and execute.

In our high performance planning process, we analyze critical aspects that will directly impact athlete performance and target our resources to provide every opportunity for athletes to achieve their Olympic and Paralympic dreams. Included in this issue are some strategies you may consider employing through science, technology, and collaboration. While Team USA has experienced great success and remains podium-ready for every Olympic Games, we recognize that the world is closing the gap and improving in many different areas. So it's critical that organizations look to utilize all resources available to ensure we maintain the edge on our international competitors and that the USOC looks to identify how best to support these endeavors.

On the heels of a highly successful Winter Youth Olympic Games in Innsbruck, and in keeping with our theme of the critical role that coaches play in the lives of our athletes, we've incorporated some developmental information in this issue of *Olympic Coach*. Too often folks in the sport world overlook the fact that Olympians don't just appear, but rather are developed and maintained in the sport pipeline by youth and developmental coaches who kept them in the game and developed skills and an enjoyment of sport at an early age. At the USOC we recognize that Olympians need nurturing, not only in preparation for elite competition, but also when they are young and looking to enjoy what they do. We're pleased to have the 2010 National Developmental Coach of the Year Michael Nyitray contribute to this issue by offering his advice on working with young athletes.

We hope this information will serve as a tool to think critically about how to increase athlete performance. As always, we welcome the opportunity to discuss ways to unify efforts and create relationships that will help us stay out in front of the competition.

Seven Lessons Learned from Zatopek!

E. Paul Roetert, Ph.D., Chief Executive Officer, AAHPERD

Peter Haberl, Ed.D., Senior Sport Psychologist, USOC

It is said that if you don't know history, you are apt to repeat the mistakes of history. Perhaps it is equally appropriate to say that knowing history allows us to benefit from the lessons it has to teach. It is in this spirit that we suggest taking a historical look at one of sports truly all-time greats, distance runner Emil Zatopek, and see what lessons today's coaches can take away from his life. It has been almost 60 years since Emil Zatopek, the Czech locomotive, pulled off his incredible triple by winning the 5000m, 10,000m and Marathon in the same Olympic Games. The 1952 Olympic Games were held in Helsinki, Finland and Zatopek had already established himself as the man to beat in the 5000 and 10,000 meters. In fact, in the 1948 Olympics in London, Zatopek won the 10K and came in a close second in the 5K (mainly because he ran his qualifying heat too fast). Since that time, he set many world records in the longer distance races; so it was no surprise that he was one of the main threats to win gold in both the 5K and 10K in Helsinki. He won both, as expected in his unorthodox style (arms flailing, head back, face with a pained expression, tongue hanging out, and awkward gait). It wasn't until after the 5K that he decided to run the Marathon, an event in which he had never participated. In typical Zatopek style, he blew away the competition to accomplish a feat that is not likely to ever be accomplished again by another runner. So what coaching lessons can we learn from this humble man from what was then called Czechoslovakia?

Don't overlook the late bloomers

Until he was 19 years old, Zatopek had never participated in organized sports. To appease his friends, he participated in a 1500 meter race unprepared and untrained. He finished in 4 minutes, 20 seconds. This ignited the running bug in him. He read about the famous Finnish running hero, Paavo Nurmi's training methods and from then on, he trained every single day, rain or shine. Although it is unlikely that in the present day we will see too many world-class athletes starting their sport at age 19, the point is that there will always be some athletes that develop later than others. In order not to miss the late-bloomers it is important for coaches to be cognizant of the research on the impact of the "relative age effect" on development. As a coach, is your behavior towards the young athlete guided by the athlete's current developmental level or by the athlete's developmental potential? If current developmental level is high partly due to the relative age effect (e.g., having an age advantage due to early physical and mental maturation, leading to more experience and subsequently higher performance in comparison to athletes with the same birth year, but later birth month) you will be more likely to give the athlete more attention, more positive feedback, and more training opportunities leading to an upward spiral of "talent" development. The small advantage of being born in January as opposed to October can, over time, turn into a huge advantage as the research shows in ice hockey, soccer, and baseball.

Perfect technique is not everything

The stories about Zatopek's style of running are legendary. Anyone who has ever seen film of him knows that he was not the most stylish of runners. What is often overlooked however, is that his

lower body technique was quite good, and his drive and determination overcame some minor technical flaws and individual idiosyncrasies. In fact, drive (or desire to succeed) is probably one of the most important attributes in identifying talented athletes. Research in psychology captures what we understand as drive in sport as “grit.” Grit is the ability to work harder, longer, and to persevere in the face of setbacks. The research of Duckworth and her associates indicates that grit is a crucial element in achieving great performance. Another element besides perseverance that comprises grit is passion. If you derive passion from an activity, you are more likely to engage in it in the face of obstacles and setbacks. While nurturing and refining technique is tremendously important for coaches, so is nurturing and refining grit and passion. One straightforward way for a coach to do this is to focus on and praise effort rather than talent in athletic achievement (see Carol Dweck’s research, as well as her article in *Olympic Coach* in the winter of 2009). Especially for athletes who lack “perfect” technique (there will be many), Zatopek’s approach to running with emphasis on passion and perseverance highlights the potential of drive to trump minor technical flaws.

Don’t be afraid to try new things

Through the late 1940’s and early 1950’s, most distance runners trained at a fairly steady pace while working to improve their stamina, especially for the 5K and 10K. Zatopek took a different approach, arguing that he already knew how to run slow. His idea was to run fast stretches (initially 100 meters, later 400 meters) interspersed with slower jogs. Today, this type of training is commonly called “interval training”, but in the 40’s, this revolutionary training method was unheard of. Zatopek’s insight and innovative approach



Photo by Alex Grimm, Bogarts

to training mirrors what sport psychologists suggest about Olympic champions. One of the characteristics of Olympic champions is that they are students of their sport and they are highly intelligent in their chosen passions. Champions are deeply involved in the subject matter of their sport, understanding its history and traditions without being bound or hindered by them.

Understand your athlete’s training capacity and how it interacts with confidence

Okay, so not everyone can (or should) train in army boots in knee-deep snow until exhaustion, run with his wife on his back or run sixty 400’s at race pace with fast jogs in between (Zatopek was known for each of these training methods). Modern sport science information, in fact, strongly advises against those training methods arguing that overtraining may be a concern and that rest and recovery should not be overlooked. However, well-known sport psychologist Jim Loehr (1994) states that, when done properly, greater exposure to physical stress always leads to greater mental toughness. As coaches, we have to understand that each athlete is not only an individual, but also that each athlete has a different capacity for pain and “training tolerance.” The true art of coaching lies in finding the right train-

ing (and recovery) dosage for the individual athlete, not only to maximize their physiological energy systems (and avoid overtraining), but also maximize their psychological energy systems so to speak. Learning to distinguish stress that toughens (adaptive stress) from stress that weakens is a critical athletic skill to understand for both athletes and their coaches. Zatopek's unique, challenging and "off-the-wall" workouts likely provided a tremendous boost for his confidence and for his determination to persevere in the heat of competition.

Competitive spirit

Zatopek loved competing; he was never afraid to put himself on the line. The fact that he decided to run the marathon after winning the 5K and 10K in Helsinki tells us a lot about his competitive spirit. Before the race he sought out the top runner (Jim Peters of England) because he figured that would be his main competition. In general, he always looked for new challenges, races and distances to conquer. Pursuing new challenges while simultaneously raising and elevating one's level of skill is a prerequisite of achieving optimal experiences or "flow states." Such flow states are further characterized by intense task focus, a total absorption into being present. This merging of action and awareness goes hand in hand with a loss of self-consciousness. Flow is one of those experiences that makes life meaningful. From a coaching perspective, we can set the table for such experiences to occur by raising the perceived level of challenges an athlete faces above the personal average of the athlete and by equipping them with the necessary skill set to meet that challenge. For Zatopek, perhaps competing wasn't about triumphing above somebody else, but rather about finding his own limits and seeking excellence within. Indeed, the Latin root meaning of the word competition stands for "strive or seek with." How we approach competition as coaches, to "triumph over others" vs. to "strive and seek excellence," will have a lot to do with how our athletes view competition.

Look for a sense of enjoyment

Everyone who came in contact with Zatopek came away with similar thoughts. He was a truly humble man and enjoyed life to the fullest. For Zatopek, running was not about medals. In fact, it is a well-known story that he gave away one of his gold medals to Australian distance runner Ron Clark, just as a gesture of respect and friendship. It was the act of running itself that made him happy, which clearly showed because his many fans adored him. Zatopek's example urges us to cultivate positive emotions not just in our own lives, but also in the lives of our athletes because it allows us to flourish. Fredrickson and her colleagues' fascinating research into the benefits of positive emotions (such as gratitude, interest, serenity, hope, inspiration, joy, awe, and love) support the wisdom of Zatopek. Her "broaden-and-build" theory postulates that positive emotions broaden our attention and build our resilience and response capabilities, which leads to upward spirals of flourishing. In the world of coaching, we don't often talk about such emotions. But perhaps, heeding Zatopek's example, we should not only talk about these emotions, but go about cultivating them, as well.

Balance

Although Zatopek's singular focus when training helped him reach the very highest level, his family life provided him with tremendous support and balance. His wife, Dana, not only understood Zatopek and his incredible training methods, but she herself was a world-class athlete. Zatopek and Dana first met at the 1948 Olympics (she finished seventh in the javelin). They married not long after. When Emil won the gold in the 5K in 1952, he just missed Dana's gold medal performance in the javelin. The Zatopek family walked away with four gold medals in the Olympics that year. Again, the research on the positive role of social support on well-being in general - and as a source of confidence in sport - highlights the wisdom of Zatopek. Having balance in life, having the support of friends and having family matters for athletes and coaches and is another lesson worth remembering.

References

Benyo, Richard (2001). *Triple Play. Marathon and Beyond*. pp. 16-36.

Csikszentmihalyi, M. (1990). *Flow. The psychology of optimal experience*. New York: Harper & Row.

Duckworth, A.L., Peterson, C., Matthews, M.D., Kelly, D.R. (2007). *Grit: Perseverance and passion for long-term goals*. *Journal of Personality and Social Psychology*. 92(6), June 2007, pp. 1087-1101.

Dweck, C.S. (2006). *Mindset: The new psychology of success*. New York. Random House.

Dweck, C.S. (2009). *Mindset. Developing talent through a growth mindset*. In *Olympic Coach Winter 2009*, Vol. 21, p. 4-7. Available at <http://coaching.usolympicteam.com/coaching/kpub.nsf>

Fredrickson, B.L. (2001). *The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions*. *American Psychologist*, 56(3), March 2001, 218-226.

Fredrickson, B.L. (2009). *Positivity. Groundbreaking research reveals how to embrace the hidden strength of positive emotions, overcome negativity, and thrive*. New York: Crown Publishers.

Freeman, P., Rees, T. & Hardy, L., (2009). *An intervention to increase social support and improve performance*. *Journal of Applied Sport Psychology*. 21(2), pp. 186-200.

Gladwell, M. (2008). *Outliers*. New York: Hachette Book Group

Gould, D., Dieffenbach, K. Moffet, A. (2002). *Psychological characteristics and their development in Olympic champions*. *Journal of Applied Sport Psychology*. Vol. 14(3), Sept 2002, 172-204.

Helsen, W. F. Winckel, J., Williams, M. (2005). *The relative age effect in youth soccer across Europe*. *Journal of Sports Sciences*, 23(6): pp. 629-636.

Jackson, S. A., & Csikszentmihalyi, M. (1999). *Flow in sports*. Champaign, IL: Human Kinetics.

Loehr, J.E. (1994). *The new toughness training for sports*. New York, NY: Dutton.

Pagano, Leo (1952). *Helsinki 1952*. Prisma Books.

Peterson, C. (2006). *A Primer in Positive Psychology*. New York: Oxford University Press.

Rosenfeld, L.B., Richman, J.M. (1997). *Developing effective social support: Team building and the social support process*. *Journal of Applied Sport Psychology*, 9(1), pp. 133-153.

Seligman, M.E.P. (2002). *Authentic Happiness*. New York: Free Press

Shields, D.L., Light Bredemeier, B. (2009). *True Competition. A guide to pursuing excellence in sport and society*. Champaign, IL: Human Kinetics

Vealey, R.S., Hayashi, S.W.; Garner-Holman, M.; Giacobbi, P. (1998) *Sources of sport-confidence: Conceptualization and instrument development*. *Journal of Sport & Exercise Psychology*, 20(1), 54-80.

E. Paul Roetert, Ph.D., is the chief executive officer of the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD). With more than 18,000 members, AAHPERD is the largest organization supporting and assisting professionals involved in physical education, recreation, fitness, sport and coaching, dance, and health education. He oversees an alliance of five national associations, six district associations and a research consortium.

Peter Haberl, Ed.D. serves as a senior sport psychologist for the United States Olympic Committee. He provides sport psychology services to various National Team athletes and has worked at six Olympic Games.

Building Better Performance through Applied Science: How NGBs and Universities can Work Together

Sam Callan, USA Cycling

Kristen Dieffenbach, West Virginia University

Sport and the art of peak performance are an increasingly complex and high-stakes experiment that coaches and athletes pursue on a daily basis in the quest for Olympic gold. In their 2005 Olympic Coach article, "Downfall of sport science in the United States," Dr. Mike Stone and colleagues discussed the importance of integrating of the scientific approach with the art of coaching for the long-term, continued success of our sports programs. Unfortunately, this is not the approach taken by most programs, but not because of a lack of interest or value. The call for better integration and the systematic use of science in training is a tall order for coaches and National Governing Bodies (NGBs) to accomplish given the budget, personnel and time constraints that many programs face. A potential resource to help address these issues can potentially be found within institutions of higher learning. Throughout the U.S., academic programs abound that can assist sport programs in rising to meet the challenges of training and competing in the modern era of science-based training. NGBs and universities have the potential to form partnerships that are mutually beneficial in pursuit of these goals. Developing effective partnerships involves a variety of departments on college campuses collaborating with the NGBs. This article is designed to provide ideas for forming and fostering successful performance-focused partnerships and to initiate meaningful discussion between the groups.

One of the most potentially beneficial relationships that can be cultivated involves a collaboration of sport science-based programs such as sport psychology, exercise physiology, sports nutrition, kinesiology, or coaching studies. Like the bump that sent the chocolate bar into the jar of peanut butter, when done right, NGBs and academic programs can become two great things that work great together. Most NGBs lack in-house sport science staff (sport physiologists, biomechanists, nutritionists, etc.) while many universities have large departments with professors and students interested in high-performance sports and are up-to-date on the latest research. Those in academia rarely have access to elite performers and top training environments, constraining what they are able to accomplish from practical or applied perspectives. The key is to look for effective ways to bring the two sides together for mutual gain.

On paper, the idea seems to be logical and obvious; unfortunately, successful partnerships between academia and science are, to date, rarely this simple and certainly not the current norm. While there are obstacles and challenges to any such proposed collaborative project, many of these can be overcome with proper planning and preparation. One of the biggest hurdles is often the unfounded negative attitudes and misconceptions on both sides. Too often coaches view scientists as being removed from the reality of sport and competition, more interested in statistics than competitive outcomes, while scientists may view the coaches as Neanderthals with no understanding of the human body or the principles of science. This lack of mutual respect and value is a major deterrent to a successful and productive collaboration. In order to overcome these prejudices and pre-conceived notions, coaches and scientists need to create opportunities to spend time together, listen to one another, understand their respective programmatic needs and constraints, and to explore outcome expectations.

Seeking the best of both worlds for the athlete's sake: exploring the potential

The best relationship between the sport scientist and the coach are formed with a clear question that directly relates to the coach. This clarity allows the sport scientist to select the best way to answer the question, whether with a literature review or by conducting a simple study/analysis. Regardless of the method, the sport scientist needs to provide answers the coach can understand and provide practical recommendations. As the coach gains confidence in the sport scientist, the sport scientist may be able to offer suggestions (especially if the first recommendations prove beneficial) into other areas.

Another way to bring a sport scientist into a program is to look for opportunities for the sport scientists to be on - or close to - the field of play to assess technique or training. Evaluation and observation projects will provide outside perspective for the program. These opportunities may also help the sport scientist gain a better understanding of the sport, the applied environment and ways to meet future needs.

Aside from the applied research/performance enhancement opportunities, colleges and universities can be great sources for interns in sport science. For example, sport nutrition is one area where NGBs and universities can assist one another. It is common for NGBs to contract with sport nutritionists to consult with athletes. The beauty of a partnership with a dietetics department is that the services can be delivered directly from the intern (or professor) to the athlete. The intern gains valuable experience (and probably meets a course requirement) while providing the athlete with a consultation. Other potential areas include sport psychology, biomechanics, exercise physiology, sport management, and coaching studies. To help forge this partnership, look for programs with sport science-based curriculum that offer masters degrees.

NGBs can also turn to colleges and universities for technical help in areas such as engineering and technology. In many sports, using technology or the application of engineering to solve problems is evolving rapidly. With low cost, high speed, and high-definition cameras, the ability to perform video analysis with off-the-shelf materials is available for a few hundred dollars. However, capturing video is not the troublesome part; film management and having clips available for coaches and athletes to review is the hard part. Software is available to assist, but film analysis or editing video may be a job in itself. Within sport science studies programs, student interns can be a valuable resource for data sorting and preliminary evaluation. Further, engineering and computer science programs may also provide a great opportunity for creative solutions when current software or hardware technologies do not fit the needs or vision of a coaching staff. Often academics in sport science can assist in finding contacts in researchers in other departments for those with the interest and the 'know how' to suit an NGBs' needs.

NGBs and universities can form other relationships between departments outside the high performance and sport science areas. All NGB could use someone to work on relatively low-priority administrative projects. Universities are regularly trying to place students in internships. An arrangement between an NGB and a university to provide sport management, communications, and finance interns, as well as interns in other areas, seems like a relatively simple and straightforward partnership. Students gain experience and the NGB gets tasks completed. Most universities will have a student

services program or career center that assists in job placement. Also consider contacting the honors program to find highly motivated students from a variety of fields who are looking for creative and interesting learning opportunities.

Working together effectively

In the current sports training model, it is important to recognize that coaches function as researchers. While a high-level coach may not have a degree in the sciences, he/she spent a career conducting hundreds of individual experiments with individual athletes. This type of 'research' may not fit into the rigid academic model, but it is important for sport scientists to understand and value this experimental coaching model, which evaluates what worked for the athlete. It is also important for the sport scientist to value the expertise of the coach.

In a quality partnership with a sport science researcher, the coach gains a set of skilled eyes that can assist in both experimental design or structure to help evaluate the experiments for maximizing gains. Scientists can be utilized to follow the coaches' experiment and offer an explanation of why the training or method was successful or unsuccessful. The scientist may also be able to improve the technique with a quantitative analysis. For instance, what should the intensity and recovery period of an interval session be to optimize VO₂max? The scientist can offer information from the scientific literature and can work with the coach to design a short-term study and control the rest of the training to see what happens when the recovery period is shortened or lengthened. In other words, the scientist can bring this methodology to the coaching process.

Having sport scientists attend training camps may be a way to economical introduce the sport scientists to the coaches and athletes (and perhaps to the sport itself). In some cases, the sport scientists can offer their observations or collect data. It also allows the opportunity for the sport scientists to interact with the coaches and athletes. Familiarity is the first step to creating a positive, collaborative environment, which may foster great opportunities for brainstorming 'wish we knew' or 'wish we had' lists that can spark new ideas.

Considerations for the NGB seeking to consult with the academic sport sciences

From the NGB perspective, the key to developing a successful partnership is having a clear plan for what the NGB needs or wants and being able to clearly articulate this to your program and to potential research partners. The coach and high performance director should be the key players in determining the plan needs. It is essential that the coach buy-in to the program and is committed to participating, or the chances of the project and partnership being successful will be very low. In areas of performance, the Performance Enhancement Team (PET) concept (programs that are athlete centered, but coach driven) needs to remain a foundation for the partnership.

In an effort to build trust and to develop a strong working relationship, we advise the NGBs to think and start small with a few key projects that can be done quickly and with minimal cost or interference. Initial projects may involve analysis of existing data or projects that can be conducted at training camps or within developmental athlete programs. Starting with lower stakes, shorter time frame projects will provide an opportunity for both sides to better understand the process and may pave the

way for larger, more impactful projects.

Ideally, if the partnership involves performance, the NGB will partner with a university that is close to where the athletes train or where camps are regularly held (or can be held). In the run up to the 1996 Olympic Games, Georgia State University partnered with several NGBs to provide consulting and testing services in the Atlanta area. The University of Utah also worked closely with several NGBs prior to the 2002 Olympic Games. The logistics and cost savings benefits of using “local” staff is obvious.

Although, just gaining access to high performance sport is often key for sport scientists. NGBs need to be cognizant that the nature of the academic culture requires researchers to produce ‘findings’ and gain a return on all their projects. Academics are under increasing pressure to produce research-based papers, which bring grant money to their departments. Getting something for nothing is, for most academics, a losing career proposition even if the researcher is interested in helping the sport. Both parties must seek ways to work together to develop relationships that are mutually beneficial, such as opportunities to present applied findings within your organization or to professional organizations.

Key considerations for the academic sport scientists seeking to work with NGBs

The nature of the academic environment often gives researchers a false sense of the value of the work done within the Ivory Tower. Bridging the divide between the academic culture and the needs of live sport performance requires that academics are willing to embrace both the expertise of the coaches and athletes and make a paradigm shift in their scientific approach. Pure research demands tight controls, is myopic in nature, and must be limited in scope to make meaningful, accurate, and small steps forward. While very valuable for pure science, these characteristics do not lend themselves well to the demands of the high expectations and fast-moving culture of modern high performance sport. NGBs and the small elite performance windows for peak achievement demand fast paced work embedded in the real world of training, with its many variables. A successful academic in the sport world has to be able to find ways to work within these parameters and to bring the ‘laboratory to the field’ rather than trying to bring the ‘athlete into the lab’.

Ideally, an NGB will have specific projects in mind that would provide information to its national coaching staff or athletes on training or competition. Rarely will an NGB or their coaches give a new sport science contact access to their most elite athletes or training environment right off the bat. More commonly, the relationship may start with a simple project such as an applied science white paper that reviews the scientific and/or medical literature for training application. For a white paper, a professor and his or her students will summarize and present recent findings on a topic in language the coach can understand. They will also provide practical recommendations. It is safe to assume the coach will be less interested in the physiological reasons for the change and more interested in how the recommendations will improve performance and how they can be implemented (ideally within the coach’s budget). From here, a sport scientist can help a coach develop ways to evaluate or assess the implementation of new training methodologies and performance gains.

Those in the sport sciences need to be aware of limitations in working with high level athletes. In field-

based research, rarely will it be possible to conduct a true double-blind randomized study with one group receiving a “treatment” and the other no treatment or a placebo. In many cases, accessing the athlete during competition and training may be limited. Another important point to consider and discuss when developing applied research is disseminating expectations. An NGB or the USOC may wish to withhold findings from the public and publication of some training methods or tools to gain a competitive advantage, which may present problems for professors in pursuit of tenure. Be sure publication expectations are clear prior to the start of any partnership.

In conclusion

NGBs will be looking for practical applications and not pure research. Sport science students or professors seeking to assist coaches and NGBs need to be able to talk to the coaches in a way that the coaches (and athletes) can understand. Learning how to walk the walk and talk the talk of the sport and coaching culture is a vital part of a successful relationship.

Colleges and university will push sport scientists to justify time spent on all projects in the form of publications, grants and other public recognition of the academic’s affiliation. NGBs and coaches should be aware of the importance of these requirements as they are typically contractual necessities for the sport scientists’ continued employment.

Both sides need to come to the applied sport science partnership with an open mind and be willing to learn from the wisdom and experiences from both sides of the equation.

References

Stone, M., Stone, M., & Sands, B. (2005). *Downfall of sport science in the United States*. *Olympic Coach*, 17, 21-24.

UPCOMING EVENTS

Innsbruck Winter Youth Olympic Games

January 13 - 22, 2012

Innsbruck, Austria

AAHPERD National Convention

March 13 - 17, 2012

Hynes Convention Center

Boston, Massachusetts

ACSM Annual Meeting

May 29 - June 2, 2012

San Francisco, California

USA Coaching Coalition

National Coaching Conference

June 19 - 21, 2012

Indianapolis, Indiana

London Olympic Games

July 27 - August 12, 2012

London, England

London Paralympic Games

August 29 - September 9, 2012

London, England

Minority Women in Coaching Conference

November 7 -9 2012

Colorado Springs Colorado

The Role of Stretching in Exercise Performance and Injury Risk

Ian McMahan, MA, ATC, PES – Active Care Physical Therapy (San Francisco)

I confess: I dislike stretching. I'm always anxious to get started with my run, bike ride or basketball game and never want to spend precious time lying on my living room floor. But we've all been told from our very first P.E. class that stretching before exercise helps prevent injury and improves performance. Or does it?

Many of us use the same stretches that we were taught in those very first experiences in exercise and athletics. Coaches, fitness professionals, and athletic trainers have long believed and taught that stretching before exercise is vital; hence, many injured athletes are filled with guilt and regret, believing that more frequent stretching would have kept them out of the athletic training room or doctor's office. But are they right? Researchers recently began to examine how muscles and tendons respond to stretching and how this relates to exercise performance and injury risk. Their findings suggest it may be time to update the old rules about stretching.

Why do we stretch? The most fundamental principle of stretching seems to hold true, that is, consistent stretching improves flexibility. However, the important question to ask is: does the improvement in muscle and tendon flexibility actually protect athletes from injury? Researchers from the President's Council for Physical Fitness concluded that "only normal levels of flexibility are needed for a low risk of injury." The council further reported that there seemed little basis to conclude that stretching before exercise lowered the risk of injury in individuals with normal levels of flexibility. Additionally, a study that examined injury rates among Australian army recruits found no useful difference between recruits who underwent pre-exercise stretching programs and those who did not stretch. However, there is evidence that either extreme inflexibility or hyperflexibility can increase the chance of injury.

While increases in short-term flexibility do not lower injury rates, many recent studies have also reported that stretching immediately before exercise may actually hinder athletic performance. Researchers attribute the decrease in performance to changes in the muscle-tendon unit as well as a decreased signal from nerves to working muscles. One study, performed by scientists from the University of Newfoundland, found that reaction time, movement time and balance were all reduced after 20 minutes of standard stretching before exercise. At the Olympic or elite levels, even the smallest reductions in these important variables could have a significant effect on athletic performance, especially given the slim margin of difference between competitors. Interestingly, it was also found that the control group's pre-exercise routine that consisted of only a warm-up significantly increased their balance, reaction and movement time scores, suggesting that a warm-up of general and sport-specific activity can have a positive effect on performance.

Stretching also seems to have a negative effect on muscular force manifested in jumping and sprint performance. In a group of experienced sprinters, stretching resulted in significantly slower 50-meter sprint times. Similarly, several studies found reductions in vertical jump height after pre-exercise stretching. In a critical review of the literature, Dr. Ian Shrier found that 20 out of 21 stretching studies

reported a negative effect of stretching on a variety of jumping performance variables. There were no studies that found a positive effect. However, while pre-exercise stretching seemed to have negative effects on jumping performance, a pre-exercise running warm-up increased performance when compared with no warm-up.

It seems that gym teachers may not have had it wrong after all: those warm-up laps around the gym before P.E. may have had a positive effect on the ensuing game of dodge ball. In a study by U.S. Army researchers, McMillian also found that, compared with a stretching warm-up, an active warm-up before exercise improved performance on power and agility tests. While the study did not directly investigate the cause for these changes, they hypothesized that stretching may reduce the amount of muscle available for contraction because of a diminished nerve signal. Another proposed theory was that while contracting, the stretched muscle-tendon unit had to take up the increased “slack” of the stretched muscle before general movement could occur.

It is important to distinguish between stretching immediately before exercise and a general program of flexibility training. The decreases in muscular force, reaction time and balance after acute stretching may not apply to a regular program of stretching performed at other times. In a critical review of the literature by Shrier, seven studies suggested that regular stretching improved performance in many of the same areas mentioned in previous paragraphs. One of those studies found that regular hamstring stretching resulted in increased hamstring muscle performance.

There's more: athletes whose sports demand high levels of flexibility like gymnasts, dancers and figure skaters may actually improve performance with stretching before exercise because performance in those sports rely on the limits of motion. While those individuals would also suffer a decrease in muscular force, balance, and reaction time, it would presumably be outweighed by an increased ability to achieve the necessary range of motion extremes for those activities.

What does this mean for coaches, athletic trainers, and athletes? The evidence suggests that athletes can benefit from a regular stretching program, if it is properly timed so that athletes are not stretching immediately prior to competition. Following this advice would seem to be important for almost every athlete as most sports encompass facets of power, reaction time, and balance. Another valuable piece of the pre-exercise routine should be both a general warm-up, such as light jogging, and one that is sport-specific.

References

- Shrier I. *Does Stretching Improve Performance? A systematic and critical review of the literature. Clinical Journal of Sports Medicine.* Sept 2004; 14:267-73
- Behm D.G., Bamburg A., Cahill F., Power K. *Effect of Acute Static Stretching on Force, Balance, Reaction Time, and Movement Time. Medicine & Science in Sports Exercise.* 2004; 36(8): 1397-1402
- Power K., Behm D., Cahill F., Carroll M., Young W. *An Acute Bout of Static Stretching: Effects on Force and Jumping Performance. Medicine & Science in Sports & Exercise.* 2004;36(8):1389-96

- Pope R.P., Herbert R.D., Kirwan J.D., Graham B.J. *A randomized trial of preexercise stretching for prevention of lower-limb injury. Medicine & Science in Sports & Exercise.* 2000;32(2):271-77
- Thacker S.B., Gilchrist J., Stroup D.F., Kimsey D.C. *The Impact of Stretching on Sports Injury Risk: A Systematic Review of the Literature. Medicine & Science in Sports & Exercise.* 2004;36(3):371-8
- Witvrouw E., Mahieu N., Danneels L., McNair P. *Stretching and Injury Prevention. The American Journal of Sports Medicine.* 2004;34(7):443-9
- Nelson A.G., Driscoll N.M., Landin D.K., Young M.A., Schexnayder I.C. *Acute effects of passive muscle stretching on sprint performance. Journal of Sports Science.* 2005;23(5):449-54
- Kokkonen J., Nelson A.G., Eldredge C., Winchester J.B. *Chronic Static Stretching Improves Exercise Performance. Medicine & Science in Sports & Exercise.* 2007;39(10):1825-31
- Rubini E.C., Costa A.L., Gomes P.S. *The effects of Stretching on Strength Performance. The American Journal of Sports Medicine.* 2007;37(3):213-24
- Fletcher I.M., Anness R. *The acute effects of combined static and dynamic stretch protocols on fifty-meter sprint performance in track and field athletes. Journal of Strength and Conditioning Research.* 2007
- McMillian D.J., Moore J.H., Hatler B.S., Taylor D.C. *Dynamic vs. Static-Stretching Warm-up: The Effect on Power and Agility Performance. Journal of Strength Cond Res.* 2006;20(3):492-9
- President's Council on Physical Fitness. June 2000 3(10)

Ian McMahan

Ian McMahan is the head athletic trainer at Active Care Physical Therapy in San Francisco. He has a master's degree in exercise physiology from the University of Maryland. He has worked with many professional and elite athletes from a variety of sports, including athletes from Major League Baseball, the National Football League and the San Francisco Ballet.

USA Rugby's 'Rookie Rugby' Wins IRB Development Award

AUCKLAND, New Zealand -- USA Rugby is thrilled to announce that its youth program, Rookie Rugby, has won the International Rugby Board Development Award for 2011.

Union vice-chairman, Bob Latham, was on hand to accept the award on behalf of USA Rugby at the star-studded IRB Awards Ceremony on Sunday October 23 in Auckland, just one day after the New Zealand All Blacks won the 2011 Rugby World Cup there.

On the same night that the IRB announced the Player of the Year (Thierry Dusautoir, France), Team of the Year (New Zealand All Blacks), and inducted rugby legends Jonah Lomu (New Zealand) and South African rugby legend Francois Pienaar (who was portrayed by Matt Damon in the 2009 blockbuster, *Invictus*) into the Rugby Hall of Fame, the IRB gave a nod to the growth of the youth game with the Development Award.

According to the IRB, Rookie Rugby “introduced a whole new raft of fans and athletes to the sport through programs administered through schools, community-based and state-based rugby organizations and USA Rugby national events. The initial aim was to introduce 100,000 new children to rugby but the reality has far outstripped that and continues to gather momentum.”

USA Rugby launched Rookie Rugby in 2008 as a non-contact introductory version of the game that enables young players to enjoy the camaraderie, fitness, and character building inherent in the sport. Rookie Rugby was played by over 350,000 children in 2010 and is on track to reach about a half million in 2011.

One of the many attractive aspects of Rookie Rugby is that it presents a low-cost and easily implemented fitness activity option for many schools and community programs. USA Rugby also provides instructional resources such as lesson plans, videos of drills, and skill and game cards to ensure proper and easy implementation.

The award comes at an exciting time for USA Rugby as the 2011 Rugby World Cup and the 2011 Pan-American Games have created a significant amount of interest in the game, rapidly increasing its exposure in the United States.



Marriage of Sports Skills with Athletic Ability Development Through Seamless Integration

Ken Kontor - Performance Conditioning, Inc.

If you use or are considering using a strength and conditioning coach to develop the athletic ability of your athletes, this is for you.

Seamless integration is the simultaneous periodized programming of sports skills, practice and competition with athletic ability development to achieve gold-medal performance. The seamless integration process is the marriage of sport skills and athletic ability development achieved through planning, communication and inter-education between the sports skills coach and the strength and conditioning coach. For our purposes, sports skills are the technical and tactical aspects of your sport in the form of practice and competition. Athletic ability development is the development of speed, power, quickness, agility, mobility, etc., specific to your sport. Together they create total workload.

Like any marriage, seamless developmental process focuses on the relationship of two people. There are many circumstances surrounding this relationship. The remainder of this article explores this relationship to help the reader better understand the process and build sound relationships.

The nature of the seamless process is dictated by the sport

1. Is the sport movement random (i.e., soccer) or patterned (i.e., shot put)?
2. Is the sport a team-sport or individual competition?

These considerations are the environment or culture in which the seamless process takes place. A limiter of the seamless integration process is the sports skills coach's need for, access to, and acceptance of the strength and conditioning coach to conduct athletic ability development. Why is this true?

As the sport skills coach, you own the ultimate responsibility of athlete development. You are the boss; it is only you who can formulate total workload (practice + competition + athletic ability development). Only through proper dosage of total work can athletes avoid injury and achieve optimal performance. Because of this, you become the limiter or, hopefully, the expeditor of the seamless process.

Understanding and gaining control of the limiters

Earlier we said the need for, access to, and acceptance of the strength and conditioning coach is the limiter. Here's what we mean.

Need for: This is based on your expertise and knowledge level of athletic ability development. This knowledge includes exercise physiology, biomechanics, motor learning, etc., as well as practical experience in writing and implementing athletic ability development programming. Like all needs assessments, careful self-examination is essential.

Access to: Consider how your current coaching situation is structured. Budget, facilities, time constraints, and a knowledgeable strength and conditioning coach readily available are just a few of the limiters you face in this area.

Acceptance of: Simply put, can you let go and trust. Lack of a trusting relationship in most cases is the biggest limiter. Developing a trusting relationship is best done as an evolutionary process. If you truly believe that the strength and conditioning coach is smarter than you with regard to athletic ability development, you are on the way to a great relationship.

Seven considerations to seamless integration for the sports skills coach

Whether you want to improve your relationship with your strength and conditioning coach or establish one, these seven considerations provide a plan to gain seamless integration.

1. Let the strength and conditioning coaches do their job

This is huge. Micro-managing a strength and conditioning coach or program erodes confidence and creates mistrust.

2. Explain what you do

What are the physical demands of your sport? What is the knowledge level of the sport skills your strength and conditioning coach has? Has s/he played the sport? Can s/he attend practice and competitions to learn more and become part of the entire program? Express what you know about athletic ability development. Go over the annual plan of practice or competitions and when you wish to peak. To avoid program overlap, don't forget to discuss the portion of practice that involves conditioning.

3. Discuss each athlete

Know where they are and what you think of their potential. For juniors, consider Long Term Athletic Development while trying to identify early or late bloomers. One of the biggest criticisms of a strength and conditioning coach is, "Why isn't my athlete getting better?" It may not be the athlete ability development program; it could be that mother nature has already decided. Consider lab and field testing data you may have and how you use it. Also, discuss the training age, injury, and training history of each athlete.

4. Communicate confidence to your athletes

Many times, for various reasons, a strength and conditioning coach will spend more time with an athlete than the skills coach. If you clearly define the authority and expectations the two of you have, the athletes will become comfortable in communicating with the strength and conditioning coach. You gain another set of ears. With many juniors, over zealous parents will have their kids do external conditioning at a local gym. This needs to be identified and coordinated so that overuse and doing the wrong exercises can be avoided.

5. Manage and understand the grey zone

The grey zone is the relationship of the athletic training/medical/nutritional/psychological/recovery, etc., staff with you, your strength and conditioning coach, and your athletes. Access and use of these resources vary widely and can create a lot of conflict. A good strength and conditioning coach will have expertise in many or most of these areas and can help you manage this “Performance Team”. Having everyone on the same page is critical and the strength and conditioning coach can be a great resource to get this done.

6. Don't join the “flavor of the month club”

There is continual exposure from the internet, seminars, and articles on how to train an athlete. The skills coach who buys-in to the next “new thing” and asks the strength and conditioning coach to “mix in” this new flavor is disrupting the program and eroding confidence. Remember, time is limited; every time you add something, something else has to be taken away. It puts the strength and conditioning coach in a difficult situation.

7. Communicate daily

What are the workloads for the day? How's so-and-so doing? Here's a tip to make these communications easy. Become a training partner with your strength and conditioning coach. Have him/her set up a program for you. Strength and conditioning coaches covet their training partner(s) to motivate, critique techniques, and just be there. A true strength and conditioning coach can name every one of their dedicated training partners. Will you be named?

The bottom line is that the strength and conditioning coach can become a confidant and invaluable service provider. But like any marriage, it's a two-way street. To accomplish this the strength and conditioning coach should also have certain responsibilities to make this happen for you.

Seven considerations to seamless integration for strength and conditioning coaches

Give/discuss these considerations with your strength and conditioning coach and gain their input. They are great communication builders. These considerations are from the strength and conditioning coach's perspective.

1. Establish common language

Establish a conditioning language that is understood by you and the sports skills coach. One of the big drawbacks of the strength and conditioning profession is that there's no standardized professional language. Lawyers have it, and so do doctors. But you don't. This creates a lot of confusion and miscommunication. The only correct language is the one that is understood by the two of you. Terms like “functional training” and “core” have a multitude of meanings. What do you say they mean and are you consistent in their use?

2. Establish leadership

Identify team leaders in the weight/conditioning room and share those leaders with the sports skills coach. This consideration is more applicable in a team setting, but is useful when any group of athletes train together. Leadership creates peer pressures and self-responsibility that translates into hard work and results. There are two types of leadership: rah-rah and lead by example. Who are the lead-by-example leaders? *Doing* has much greater impact than *saying* what you're going to do. Now compare notes. Is the weight/conditioning room team leader the same as in practice/competition? If the individuals are different, how do you maximize the leadership qualities of the leader to the benefit of all?

3. Define the role of field testing, if any

First discuss what needs to be measured from the sport skills coach perspective, then establish how to measure it. Field testing can have many uses: motivating athletes, creating baseline information for post-injury rehab progress, assessing the effectiveness of the athletic ability development program, identifying weakness, etc. Testing can be time consuming and a source of stress for athletes; is it worth it? Finally, establish when testing should be done based on the annual plan.

4. Set program goals

How does athletic ability development enhance sports skills? How does what you do match the sports skills coaches' style of competition (tactics), demands of the sport and individual needs of each athlete? Do weight/conditioning room goals match competitive goals?

5. Establish weight/conditioning room policies and procedures

Is proper strength and conditioning technique taught? How do you monitor increased loading or intensity in relation to practice or competition sport skill loading? If conditioning is used as punishment what is the negative message it sends to athletes? What are the rules in the weight/conditioning room and how do they compare with the sports skills coaches' rules?

6. Establish recovery strategies

The concept of "global" recovery, which includes: sleep, rest, loading manipulation, external recovery methods (hot/cold contrast, massage, etc.), nutrition and legal supplementation, has created a paradigm shift in periodization planning. After practice and competition planning, athletic ability development was considered with recovery left to fill in open time. Now recovery is a primary part of the process. To insure proper recovery, athletic ability development is done with minimum effective loading. With practice and competition results, the priority of advancing athletic ability should be done without over stressing athletes. The key is to load effectively enough to improve overall performance while avoiding over-use and over-training situations.

7. Deal with time restraints

Understanding the time available will provide direction as to what can and can't be done. What are the priorities based on time available?

With close communication, creating an atmosphere of trust and respect of the knowledge possessed by all involved, a truly seamless integration can be achieved to benefit you and your athletes.

Ken Kontor

Ken Kontor was one of the founders, executive director and for 14-years publications editor of the National Strength and Conditioning Association (NSCA). In 1992 Kontor founded Performance Conditioning, Inc. The organization's mission is to bridge the gap between the conditioning professionals and sports coaches on conditioning athletes. His company publishes sport-specific newsletters for volleyball, soccer, cycling, and baseball/softball in cooperation with each specific sport's coaching associations and/or national governing bodies. More information may be found at www.performancecondition.com

'One Stop Shopping': Dartfish as a Complete Video Analysis Platform

Scott Riewald, PhD, CSCS – USOC High Performance Director, Winter Sports

David A. Ramos – US Tennis Association, Coordinator of Coaching Education & Sport Science

In recent years we've witnessed the emergence of a variety of new video analysis tools. Just doing a quick Google search of 'sport video applications' one will find, for example, there are applications for the iPad that can allow you to record clips using the iPad camera and compare two video clips side by side. There are also computer-based programs that allow you to merge quantitative data and video to perform in-depth, quantitative analyses. And there are network-based programs and applications that allow one to share files and video with others around the country and the globe. Looking a little deeper, though, one quickly finds that there are not many systems out there that 'do it all.' Dartfish, however, is one software package that does bring the full range of tools to the table to help you analyze athlete performance: That is what makes Dartfish different – it does offer it all. Whether you simply want to record video or perform a complex analysis, whether you want to build a library or develop coaching education videos, whether you want to keep all the video on your computer or post and share it with others, Dartfish offers a 'one-stop shopping' experience for coaches and athletes. While there are still some similarities between today's version of Dartfish and their video analysis system first introduced in 1998, if you have not worked with Dartfish recently you may be surprised by what you'll find; today's Dartfish, combined with Dartfish.tv, provides a comprehensive, start-to-finish solution for coaching and performance analysis.

Dartfish 6.0 (www.dartfish.com) is the latest version of the Dartfish software, and it offers something for everyone - from coaches to officials to athletes and their parents. As evidence of the broad range of applications where Dartfish can be used, take a look at Table 1, which overviews the various ways Dartfish is presently being used in the world of sport.

- Olympic sport National Governing Bodies (NGBs) are using Dartfish and Dartfish.tv to stream live events to their membership and fans (often times earning revenue in the process).
- Coaches are using Dartfish to quickly break down video and then share that video, using Dartfish.tv, with athletes and coaches even if they are thousands of miles away.
- Sport educators are using Dartfish/Dartfish.tv to share educational material and best practices while expanding the knowledge base of coaches, athletes, and parents across the country.
- Judges and officials are using Dartfish for the instant replay of events during a competition and to share best practices in order to improve the overall level of officiating.

And these examples only scratch the surface of what one can do with Dartfish. In looking at this table it's easy to view all of the things the software can do and say, 'This is too complicated and much more than I need.' But let's examine that comment more closely and discuss how a basic 'entry level' analysis can quickly and easily be expanded into something more, and - in the process - improve the analysis and feedback you are able to provide to the athletes you work with (and hopefully enhance athlete performance at the same time). In the following sections I've tried to lay out a process for developing

a comprehensive video analysis platform that builds on itself in 'stages,' focusing initially on some relatively basic functions of Dartfish and advancing to more complicated ones. As we go through this article, my hope is that your eyes will be opened to some features of Dartfish that you may not presently use and at the same time discover opportunities where you can expand on how you can use the software to impact athlete performance.

Building the foundation of a video analysis system

Stage 1: Live video analysis. One of the foundational features offered by Dartfish is the 'In the Action' video collection and analysis module. A video camera connected directly to a PC running Dartfish immediately becomes a field-of-play-based DVR. Video can be stored directly on the computer and actually be played back live or with a set delay, providing an instant feedback tool for the athletes you work with. Video can be recorded, shown, rewind, and viewed again in slow motion to qualitatively evaluate the execution of an athletic task or event. The Dartfish software works with an ever increasing range of video formats, including various HD video formats, to support your coaching and performance analysis needs.

Stage 2: 'Off line' analysis. Let's go one level deeper to evaluate an athletic performance in greater detail. Whether you record video directly to the computer with the 'In the Action' module or 'Import' video from a DV-tape, SD card, or hard drive camera, you can now perform some more detailed analyses. Use the telestrator tools in Dartfish's 'Analyzer' module to draw on the video and highlight things done well (and poorly) in the execution of a task. Record more than one clip and now you can split the screen and compare today's performance with the one done a month ago – or look at your performance side-by-side with the best athlete in the world in your event.

Stage 3: Create a 'video document' by adding audio and written comments. Within the 'Analyzer' module you can select key frames from the video – times where an athlete does something remarkable – and add written and/or recorded comments that become embedded in the video. Save the video file (or create a mediabook), drop it into a program like Dropbox, and you can share your comments with an athlete regardless of whether you are physically with them or not. Even something as seemingly 'simple' as the process just described opens the door for remote coaching. As an example, an athlete training in a different part of the country or the world can send you a video that he/she recorded during a training session. You in turn can upload it, import it into Dartfish, analyze it, record comments, and get it back to the athlete in a short amount of time. Combine this with a Skype call and you can have a very detailed feedback session to enhance the athlete's performance.

Stage 4: Assign categories and/or tags to your video clips to create a video library. How frustrating is it to know that you have a video clip from a competition three years ago saved somewhere on your computer – a clip that will highlight the exact point you want to make with your athlete – yet you cannot remember where you saved it. In Dartfish you are able to assign 'categories' to all of your video clips so you can search a large archive of video clips and find exactly the one you want, when you want it. Maybe you want to ID each clip by the names of the athlete(s) competing, the date the video was recorded, and name of the competition. Maybe you want to identify the country competing so you can effectively scout opponents down the road before major international competitions. In either case, your ability to search through past footage becomes infinitely easier when using categories. Within indi-

vidual video clips you can also assign other identifiers, called tags, to call out specific events – maybe goals within a soccer game, or jumps in a figure skating routine. Tags are also searchable, and when you use tags in conjunction with categories you can create an incredibly powerful and functional video library that you can use for scouting and performance/skill analysis.

Stage 5: Share your video online. Dartfish.tv (www.dartfish.tv) is one of the newest additions to the ‘Dartfish family.’ Dartfish.tv is a Web 2.0 based video sharing platform that allows you to post video (tags, categories, comments, and all) to a server for download and review by approved viewers anywhere in the world, as long as there is internet access. You have the ability to create ‘channels’ that allow you to post video and control access to whatever level you choose – some content can be free to the general public, viewing of other videos can be restricted to specific teams and/or athletes, and other content can be posted to a ‘pay-per-view’ type of channel providing opportunities for revenue generation. There is a charge to purchase a Dartfish.tv channel, but a number of sport organizations have leveraged the video they post on Dartfish.tv, developing content that builds and educates their membership base and/or generates revenue for the organization. Several NGBs and International Federations have Dartfish.tv channels and I encourage you to check out and see how they use this platform to disseminate educational and performance impacting content:

- US Ski and Snowboard - <http://www.dartfish.tv/ussa>
- US Tennis Association - <http://www.dartfish.tv/usta>
- USA Volleyball - <http://www.dartfish.tv/usav>
- World Taekwondo Federation - <http://www.dartfish.tv/wtf>

Expanding the capabilities

Stopping here, it is easy to see how one could ‘enter’ the world of Dartfish at a low level and quickly progress to a point where you are able to compare athletes to one another, build a video library, scout opponents, and share video/communicate with the athletes you train as well as other coaches. But even these examples do not highlight all of the features that exist in Dartfish. It’s important to mention that not all of the features described below are right for every coach, athlete, or NGB – but they are right for some. Let’s take a look at some of the additional functionality Dartfish provides. I also encourage you to read the sidebar written by David Ramos from the US Tennis Association. David describes how the various features of Dartfish are used to assist the USTA coaches as they work to develop tomorrow’s tennis champions.

‘Video overlay’ of data. There are many sensors and measurement tools out there that produce a ‘digital signal’ that can be imported, synchronized, and viewed on top of the video taken of a performance. Maybe you want to monitor an athlete’s heart rate or EMG collected during a treadmill running test, maybe you want to know the velocity of the bar measured during the execution of a power clean, or you want to know how much power a cyclist generates during a track cycling race. With some additional analysis time, it is possible to integrate any of these data streams and overlay them on the video to provide a feedback and analysis tool that packs a tremendous punch. This type of analysis can (and has with a number of sports) provide great insight into the factors impacting athletic performance. All of this data can be saved as part of a mediabook or uploaded with the video to a Dartfish.tv site.

Development of video apps. With the help of Dartfish, the World Taekwondo Federation (WTF) recently developed a first-of-its-kind video application for the iPad/ iPod (as well as other mobile devices). In a recent interview with Jason Anson of SportTechnology.com, Dartfish CEO Victor Bergonzoli is quoted as he describes the app and its impact on the world of taekwondo:

'Each competitor is captured at major events and [the video] is linked to the scoring system. Dartfish tags the video automatically with each point that is scored. The video is then uploaded to Dartfish.tv. From there, a dynamic playlist is created automatically and displayed on the athlete's personal section of the International Federation. At the same time, his fans and parents can enjoy each 'never before seen' video. Some will download some video to their computer for further analysis, while others enjoy browsing thousands of videos on their tablets and mobiles. Local organizations start doing the same.'

I encourage you to look up the free WTF app and download it to your mobile device. Check out the possibilities that this type of video sharing offers. Would a similar platform be beneficial in your sport? Can you take this technology to another level?

In the action tagging. Tagging an event 'after the fact' doubles the time you have to actually spend processing a competition. To help streamline this process, Dartfish has created the Easy-Tag application for the iPad/ iPod touch. You can create a tagging template in the application and tag events live as you watch them. Later, you can import this tagging file, synchronize and link the tags to the video you recorded, and quickly add this tagged video to your video library.

Judging and instant replay. More and more, Dartfish is being used by officials in the actual competition arena to review controversial or disputed calls. The ability to slow down and review the video frame by frame makes it easier to review difficult calls that may have been made incorrectly in 'real time'. Some sports are also integrating scoring systems with Dartfish technology; when a point is registered in taekwondo, for example, and electronic signal is sent to Dartfish and a tag is created. At any time during the match, an official can go back and review the points scored.

Educational content delivery. Finally, Dartfish and Dartfish.tv provide a great opportunity for developing and delivering educational content to coaches, athletes, parents, and the general public. A number of NGBs have developed web-based educational content that addresses such topics as sport technique, coaching principles, and various areas of sport science/ sports medicine. All of this content can be distributed via Dartfish.tv. It is an easy way to disseminate information quickly, and in an age where paper-based publications are quickly going by the wayside, Dartfish.tv provides a glimpse into what the future of on-line education could look like.

Taken as a whole, the features described above make up the backbone of an integrated, streamlined video analysis and sharing platform that is unrivaled by other video analysis 'products'. Sure there are some applications that capture one or two of the features listed above, but I am not aware of any that capture them all. For these reasons, Dartfish continues to be a staple in the USOC's Sport Performance Division as well as with a number of sport National Governing Bodies here in the United States.

It's true that we may not use all of the features all of the time, but they're nice to have and they have all been used to impact the performance of an Olympic athlete at one time or another. I look forward to continued advancements from Dartfish in the years to come and I encourage you to check out Dartfish for yourself.

Table I: Sport applications and benefits of Dartfish

		Key Concepts	Applications/Benefits
Events	Judging	Judges access video that combines notations, markers and more; routes can be photographed and imported for judges' use	Best practices; highlight areas that are important; build a library of judges' rulings for reference and developmental training of future judges
	Video Review	Judges can access the video in real time from any camera/station (based on set-up) for review and sharing	Increase efficiency across all areas of call/score disputes; increase credibility of scoring process
	Video On Demand	NGB/Club creates a litany of collections and clips for immediate sharing on Dartfish.tv	Free or subscription-based; ease of content creation; outstanding branding opportunity; revenue generation; clips can be used for a variety of audiences (judges, coaches, athletes, fans)
Certification	Judges	Judges' certification programs are enhanced by utilizing Dartfish's powerful communication tools that allow for video presentations, attachments and commenting/observations	Specific training modules that can be replicated throughout the program; content creation takes place simultaneously with capture of events; distance learning reduces expenses and increases revenue; clips can be utilized for different purposes; individual judges can be analyzed for accuracy, consistency and knowledge
	Coaches	Coaches utilize the education modules created by NGB to benefit from distance-learning as well as studying the standards and procedures as defined by NGB	Develop standards and procedures that can be readily accessed by everyone; library of coaching skills, drills and techniques; best practices for coaches; develop internal communications platform for remote assessments
Education	Coaches	Coaches access on-going training and support via the NGB channel on Dartfish.tv	Technical and tactical drills, skills and development training can be delivered via Dartfish.tv; communication among coaching community can be enhanced; coaches can develop their own 'network' of teams, libraries and other methods of connection
	Athletes	Athletes/competitors access competitions/clinics, etc. online; can develop personal collections of favorite climbers; compare individual skills with those of top-rated climbers	Dartfish.tv becomes the delivery mechanism for your NGB, where you build extensive libraries of collections (competitions, seminars, training, clinics, etc.) that member athletes access (fee based or free with membership); build brand awareness through private branding of the .tv channel; attract financial support of sponsors due to quantifiable visitor counts to site and ad banners
Coaching	Live	Onsite coaching stations to accelerate learning for members/athletes	Use various aspects of Dartfish software to enhance the learning experience and create a revenue stream for your coaches.
	Post-Session	Session is captured, imported into Dartfish, and analyzed; analysis is reviewed/shared with athlete and cataloged for future reference	Individual or group sessions can be shared with team-members, etc for maximum benefit; comparison clips can be analyzed; athletes develop their own video library, comments, etc.
	Remote	A coach's reach can be expanded by offering remote coaching via video upload/download; full analysis and effective feedback is offered; expand coaching community and access	Members can access their coach or any coach via remote coaching tools and methods. By utilizing video drop/ delivery services (such as DropBox or You SendIt), athletes can send video files to their coach and receive comments, notations, drawings, etc. Additionally, a community of coaches can contribute to a climber's evaluation based on the set-up of the Dartfish.tv channel.

David A Ramos Sidebar:***USTAPD and Dartfish***

The United States Tennis Association Player Development Incorporated (USTAPD) has been using Dartfish for ten years (since 2002), but in the last three years has greatly expanded how they use the software and the new Dartfish.tv Platform. In 2010, Player Development Incorporated entered in a Master Service Agreement with Dartfish to provide licenses to all the Player Development tennis coaching, strength and conditioning, and national support staff as well as a Dartfish.tv channel to host all of the video. The USTAPD's Dartfish.tv Channel currently has over 2,400 videos and nearly 1,500 members that have subscriptions to a wide range of topics from 10 and Under Tennis to top professional match analysis to sport science and strength and conditioning information.

The majority of the videos on Dartfish.tv are Regional Training Center Camp video profiles that are part of a new Player Identification and Development Department initiative. Since 2009, the Player Identification and Development Department of USTAPD has established partnerships with the top junior development programs around the country called USTA Certified Regional Training Centers or RTC's. Each RTC must purchase Dartfish software as part of their RTC agreement and supply video profiles of both their internal high performance players and each player that attends one of the RTC Camps that they host. In 2012, the RTC network will include 24 locations in 15 of the 17 USTA sections around the country and they will host approximately 60 camps. Each time a player attends an RTC camp, video is taken and added to their private collection along with a written evaluation. The USTAPD National Coach that directs each RTC camp follows up with the player's parent and personal coach to go over the video, evaluation and suggestions for improvement. Perhaps the most important function of Dartfish.tv is to serve as the primary tool for Player Identification and Development in the USTAPD's effort to develop future grand slam champions.

USTAPD also uses Dartfish software and Dartfish.tv to host the video of the full-time players that train at the three USTAPD National Training Centers in Boca Raton, Florida, Carson, California and the Billy Jean King National Training Center in Flushing, New York. In the coming months, Dartfish.tv will integrate with the USTAPD's Athlete Management System which will expand the current video tracking system to include data on daily practices, periodization/planning/scheduling, match evaluation, and strength & conditioning.

Most recently, the USTAPD National coaches have started traveling to tournaments with video cameras and I-Pads to do some simple tactical analysis of matchplay. Using the Dartfish EasyTag application, they are able to tag key performance indicators such as winners and errors and review them in a short yet effective 20 minute session prior to the next competition.

Comfort is the Key to Coaching Young Athletes

Michael Nyitray, 2010 National Developmental Coach of the Year

When we think of coaching – especially great coaching – we probably think of coaches that possess great technical knowledge of his or her sport along with intense personalities and strong motivational charisma. While these descriptions probably do describe the really effective coaches, they are, however, mostly coaches of adult athletes. What? Isn't coaching athletes essentially the same regardless of age? Nope, coaching adults is quite different from coaching kids, especially really young kids.

This article explores some of the subtle and not-so-subtle aspects of young athletes from a child psychology perspective. Much of what will be discussed will have an emphasis on the initial meeting and the new athlete/coach association. Being able to win over the comfort and confidence of a young athlete is not just about being knowledgeable in your sport. It's also about understanding what young athletes want and being able to quickly show them you are there to help them improve their athletic abilities.

A talented young athlete is still a child

When we see a young athlete with extraordinary talent, it's easy to forget that talent is wrapped inside the body, and mind, of a child. Kids think differently than grown ups, especially when they are younger. Their logic is pretty black and white. Abstract thinking and conceptualization – not to be confused with creative thinking or imagination – doesn't really start developing until the adolescent years. In short, kids lack the vocabulary, technical knowledge, and life experience to be able to effectively interpret abstract concepts.

Coaching explanations must be succinctly descriptive and presented with a vocabulary that's on the level of the athlete's intelligence and maturity, not age. Analogies are an effective method of explanation so long as they stay within a topic that the athlete already knows. For instance, nothing will be more frustrating to a bright young athlete than to be spoken to like "a little kid".

Talking over the head of a young kid is equally counterproductive. Just because a kid may have superstar talent doesn't automatically mean they have superstar intellect. Using lofty jargon or complex concepts with a youngster of average intelligence may not only be interpreted as demeaning, but it also tends to be down right boring. Either way, the coach will lose the interest of the young athlete for no other reason than the coach was trying to coach the talent, not the person. Just keep in mind, the two cannot be separated.

Coach the intelligence not the age

To be most effective, a coach needs to understand his or her young athlete not only from an athletic perspective, but also the child's intelligence and athletic background. It's been my experience that finding out what other skills my clients have helps me relate to what they already know with what I want to teach them. Learning about their grades in school and what subjects they like helps me get tuned in with their intellectual capability. But it's that athletic background that can uncover additional athletic potential. Leverage, timing, alignment, etc., are universal constants in sports. If the young athlete has

a competitive athletic background or even just a lot of experience in another sport, analogizing concepts from that other sport will better illustrate what you're trying to convey to the young athlete. (By the way, this works great with grown-up athletes, too.)

The younger the child, the more results-oriented they will be. Give them something tangible other than lower/higher score in their respective sport. Skill drills with specific challenges that offer some type of validation or reward is an effective way to get a kid's focus off of results and on to technical training.

Height represents authority

When coaching young athletes, the coach is always taller; sometimes much taller. Kids have an instinctive recognition of authority for adults. The recognition of authority is amplified with regard to coaches. In many cases, the larger size of the adult coach creates a certain amount of intimidation. This intimidation will diminish over time, especially with athletic success. But some kids have trouble getting over this intimidating size difference. Coaches need to be empathic to a young athlete's comfort or discomfort, even when it comes to something as basic as how tall we adults are. Without any conscience intent, an adult coach can be impairing the coaching experience by simply standing "over" the young athlete.



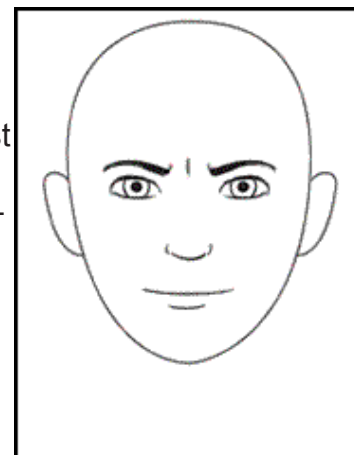
Fortunately, it doesn't take much to eliminate any height intimidation. All that's needed is to adjust your height lower so to be more on a similar eye level with the child. This only needs to be done a couple of times for the young athlete to understand that there's nothing to be afraid of and no reason to feel intimidated. Once this comfort is gained, the coach can go back to standing normally because the young athlete will be looking at the coaching, not at the big (intimidating) person telling them what to do.

From time to time, continue to find ways to lower/reduce your height by leaning against a table or other object that can bring you closer to eye level with the young athlete. It shows the child that you are sincere with your message, thus further gaining the child's trust and confidence. This is a perfect segue to the next topic.

Non-verbal communication

With every gesture, every expression, we continuously send messages with our body language. These signals are the most basic form of communication. The most telling of our non-verbal communication comes from our facial expressions. Going as far back to the 1800s with Charles Darwin, there are

some in science that believed much of our reaction to facial expressions is “hardwired.” A great deal of what we think and feel originates from our subconscious as well as our instincts. We often don’t realize how our happiness, disappointment, etc., is manifested in the face. Happiness and approval are first recognized with the smile, but the eyes and eyebrows also confirm the positive expression. Conversely, tension in the jaw muscles, pursing the lips, and lowering the eyebrows are classic expressions of displeasure, or even anger. And kids are very attentive to them, as well.



This paragraph might seem a bit controversial, but I’m including it to illustrate how unusual circumstances can be. Coaches who have eyebrows that are turned down towards the nose can be unfairly labeled as mean and/or angry. The first ‘hardwired’ impression interprets the down-turned eyebrows as an expression of anger and/or meanness. Some of you reading this article may find yourself reminded of when you met a coach – or other person – who had down-turned eyebrows and first thought that person wasn’t going to be nice or was mean, only to discover they were actually a very pleasant person. This instinctive reaction is not only an incorrect assessment of the coach’s personality; it’s actually an unfair one. The simplest way for a person with these kinds of eyebrows to overcome this is to raise his or her eyebrows upon meeting a child and speak with a friendly voice. Employing this simple strategy upon first acquaintance provides a “nice person” image, promoting a genuine perspective of the coach and his or her personality.

Becoming aware of how we present these subtle, non-verbal messages can go a long way towards improving a kid’s coaching experience. Smiling, as opposed to frowning, is much more effective towards helping a young athlete be more comfortable and open to coaching.

The same goes for what we do with our hands. How we gesture with our hands and arms also says a lot about what we are thinking and feeling. The two classics with the arms are: hands on the hips and the arms crossed. Hands on the hips can suggest a message of frustration or impatience, especially if standing over the young athlete who is struggling to perform a new skill or improve an old one. The same goes for crossing the arms. Aside from “saying” don’t approach me or get too close, crossing the arms can also project frustration and impatience. The more animated a coach is when he or she is “talking” with their hands and arms (within reason of course), the more engaged the coach appears to be in the coaching.

Empower confidence by making the child’s opinion count

The younger the child athlete, the more limited their cognitive skills and mental versatility. But that doesn’t mean they don’t have opinions or ideas. Coaching is a two-way experience. The coach, of course, is the source of knowledge, but listening to what the young athlete is thinking can actually enhance the coach’s coaching. No one knows everything and inspiration can come from the most unexpected sources...sometimes even the kids you’re coaching.

Improving a young athlete’s ability is not limited to just their physical technique. Developing their cognitive skills is the other part of improving a young athlete, which is far more than just compiling new infor-

mation. Developing the inner athlete is a blend of acquiring and assimilating technical knowledge along with building the confidence for implementation. Aside from hearing a different perspective, allowing the young athlete to have a voice is simply good for the development of their self-esteem.

Personal space

When we think of feeling safe, the first thing that comes to mind is danger, not comfort. Danger is pretty much self-explanatory. Comfort, in this case, refers to the amount of personal space (actual physical distance) between the child and the coach.

Each person defines his or her personal space uniquely where he or she feels comfortable. It's your obligation as a coach to recognize and respect a child's personal space. Get too close and the child will begin to feel uncomfortable, thus undermining the coaching message. Think about it, what adult feels comfortable with a "close talker?" Kids are even more sensitive to "being too close" because they have to rely more on their emotions and instincts – which is another way to describe their personal comfort – due to their lack of life experience.

Whenever possible, having a table and bench or other objects in between the coach and the child will automatically help create space and comfort for a young athlete. As a bonus, the equipment can provide a platform to rest a video camera and/or printed material used during coaching. It's the coach's responsibility to recognize and respect the personal space of the coach/athlete association. Doing so will optimize the athlete's comfort and will, in turn, maximize the young athlete's coaching experience.

The Bottom Line...

As the coach, you are the boss and your athletes take their lead from you. Show that you are having fun and you will show your young athletes that you want to be there to help them improve. Finding out what makes the young athlete tick is the best way to keep them interested in learning and interested in training. The more enjoyable you make the coaching experience, the more you will inspire your young athletes to want to continue to improve.

Michael Nyitray

Michael Nyitray has coached high school bowlers in south Miami for the past four seasons. He also has developed a bowling program for high school bowlers in Broward County (FL). Nyitray has hosted and facilitated bowling clinics throughout central and south Florida, as well as annually provided hundreds of individual and group lessons. Nyitray is the 2010 National Developmental Coach of the Year.



Up2Us Membership Services

WHY JOIN UP2US?

Up2Us is a network of 500 youth organizations that use sports to promote health and wellness among 25 million youth. By joining Up2Us, you are eligible to take advantage of our services as well as share your own needs with our professional staff who are committed to seeing you succeed.

Up2Us services focus on three key areas: Capacity Building, Training and Program Quality.

CAPACITY BUILDING:

- **Staff:** Trained, subsidized AmeriCorps coaches and VISTAs
- **Volunteers:** Access to the Up2Us volunteer database and tracking system
- **Insurance:** Discounted insurance programs
- **Reduced Admin Costs:** Exclusive discounts on office supplies and other business services
- **Equipment/Apparel:** Access to free or discounted sports equipment
- **Fundraising:** Leads for grant opportunities
- **Advocacy:** Strategies for engaging federal and local leaders to support your program

TRAINING SERVICES OFFERED TO UP2US MEMBERS:

Up2Us provides the first comprehensive in-person and online training on using sports to promote positive youth development with an emphasis on working with youth from disadvantaged backgrounds. Up2Us training is conducted by leading experts in the field and is customized for each program.

Training topics include, but are not limited to:

Sports-Based Youth Development

Building A Positive Culture

Coaching Youth with All Abilities

Service Learning through Sports

Promoting Health and Nutrition through Sports

Creating Practices that Promote Physical Activity

Cooperative Games and Teambuilding

The Healing Power of Play

Evaluating SBYD Programs

Engaging Girls in Sports

Using Sports to Prevent Bullying

Cultural Competency: Coaching Urban Youth

PROGRAM QUALITY:

- **Best Practices:** Access to successful program models and up-to-date research on the field
- **Evaluation/Assessment Tools:** Online materials and ongoing support to help improve your program

"Up2Us is great at communicating on vital topics and organizing us as a group that can have a unified voice and benefit from resources we all need." - Dave McGoy, Leadership Through Sports

LEARN MORE OR JOIN UP2US NOW AT WWW.UP2US.ORG

Up2Us 520 8th Ave, 2nd Floor New York, NY 10018 212.563.3031 www.up2us.org

On the cover: Mikaela Shiffrin

Cover photo by: Christophe Pallot, Agence
Getty Images Sport

USOC Directory for Coaching Resource Staff

Sport Performance Division

Chief of Sport Performance
Alan Ashley
Alan.Ashley@USOC.org
719.866.4971

Coaching Education Manager
Christine Bolger
Christine.Bolger@USOC.org
719.866.2551

International Games

Managing Director
Leslie Gamez
Leslie.Gamez@USOC.org
719.866.4059

Website

www.teamusa.org/resources/usoc-sport-performance

Team Leaders

Wesley Barnett, Team Sports
Wesley.Barnett@USOC.org
719.866.4820

Rachel Isaacs, Acrobat/Combat Sports
Rachel.Isaacs@USOC.org
719.866.4662

Julie O'Neill, Paralympic Sports
Julie.O'Neill@USOC.org
719.866.4794

Kelly Skinner
Kelly.Skinner@USOC.org
719.866.4794

Chris Vadala
Christopher.Vadala@USOC.org
719.866.4082

Olympic Training Center

Chief of Sport Operations
Mike English
Mike.English@USOC.org
719.866.4501

The U.S. Olympic Committee Sport Performance Division has designed this publication for coaches at all levels of competition and is happy to bring this valuable resource to you electronically and free of charge.

To receive your complimentary subscription, send an email to Christine Bolger.



**SPORT
PERFORMANCE**