Developing High Performance Systems: Challenges and Considerations

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Head of Sports Physiology Aspire Academy
Outline

• General Observations
• Pre-requisites of high performance
• Creating the environments for Athletes
• Creating the environment for coaches and support staff
• Current challenges
• Supporting the Athlete’s journey
• Opportunities to explore
Defining High Performance

Athletic performance (integrated performance outcome)

Optimal → Under-performance

Periodisation plan and competition sequencing

Physiology

Biomechanics

Psychology

Tactics

Health/lifestyle

Sequence of training (macro, meso, micro)

Optimal/poor

Optimal/poor

Optimal/poor

Optimal/poor

Optimal/poor

Volume

Weight training

% Muscle fat

Intensity

Recovery training

Technique

Repetition ability

Equipment

Focus and discipline

Cognitive stress

Emotional stability

Confidence

Psych.

Social distractions

Competition analysis

Nontraining stress

Health

Sickness

Fatigue

Work

School

Finances
Winning is difficult

MEDAL DISTRIBUTION (NUMBER OF NOCS)

<table>
<thead>
<tr>
<th></th>
<th>Gold</th>
<th>Silver</th>
<th>Bronze</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIO2016</td>
<td>23</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>LONDON2012</td>
<td>22</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>BEIJING 2008</td>
<td>22</td>
<td>24</td>
<td>16</td>
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</tbody>
</table>

Number of NOCs winning Medals by Sport
HP REQUIREMENTS

CLARITY OF PURPOSE/MISSION/VISION
• Setting the correct level of expectation

UNDERSTAND THE SOCIOECONOMIC ENVIRONMENT
• Approaches working well in some countries may not be replicated successfully elsewhere

MAPPING THE JOURNEY
• Making sure everyone in the organization knows what you are trying to achieve, how and what key milestones need to be achieved

Building the team
• Who do you need on board to achieve the mission
• What roles and responsibilities do you need

Accept that at some point you will have problems and be prepared for them
Aiming for excellence will not win you many friends
FUNDING FIGURES- It’s not all about money

<table>
<thead>
<tr>
<th>Governing body</th>
<th>Total funding (in millions)</th>
<th>Medals won (2004 to 2014)</th>
<th>Total funding per medal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ski &amp; Snowboard</td>
<td>$98.7</td>
<td>48</td>
<td>$1,431,068</td>
</tr>
<tr>
<td>Track &amp; Field</td>
<td>60.9</td>
<td>77</td>
<td>791,503</td>
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<tr>
<td>Swimming</td>
<td>53.3</td>
<td>90</td>
<td>591,461</td>
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<tr>
<td>Speedskating</td>
<td>36.9</td>
<td>21</td>
<td>1,757,615</td>
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<tr>
<td>Hockey</td>
<td>30.1</td>
<td>4</td>
<td>7,536,112</td>
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<tr>
<td>Gymnastics</td>
<td>26.5</td>
<td>13</td>
<td>1,959,203</td>
</tr>
<tr>
<td>Bobsled &amp; Skeleton</td>
<td>26.8</td>
<td>9</td>
<td>2,975,640</td>
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<tr>
<td>Rowing</td>
<td>20.7</td>
<td>6</td>
<td>3,337,950</td>
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<td>Wrestling</td>
<td>25.9</td>
<td>13</td>
<td>1,989,203</td>
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<td>Volleyball</td>
<td>24.0</td>
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<tr>
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<td>23.7</td>
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<td>1,825,425</td>
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<td>Cycling</td>
<td>23.2</td>
<td>11</td>
<td>2,106,347</td>
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<tr>
<td>Soccer</td>
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<td>3</td>
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<tr>
<td>Sailing</td>
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<td>4</td>
<td>5,068,022</td>
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<tr>
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<td>19.7</td>
<td>8</td>
<td>2,465,594</td>
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<tr>
<td>Basketball</td>
<td>18.7</td>
<td>6</td>
<td>3,116,444</td>
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<tr>
<td>Diving</td>
<td>17.5</td>
<td>4</td>
<td>4,384,665</td>
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<tr>
<td>Water Polo</td>
<td>17.4</td>
<td>4</td>
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<tr>
<td>Figure Skating</td>
<td>15.1</td>
<td>6</td>
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<td>Luge</td>
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<td>Biathlon</td>
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<tr>
<td>Fencing</td>
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<td>7</td>
<td>1,096,319</td>
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<tr>
<td>Canoe/Kayak</td>
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<td>1</td>
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<td>Field Hockey</td>
<td>13.1</td>
<td>0</td>
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<td>Synchronized Swimming</td>
<td>12.7</td>
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<td>Curling</td>
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<tr>
<td>Judo</td>
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<td>4</td>
<td>2,530,064</td>
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<tr>
<td>Taekwondo</td>
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<td>7</td>
<td>1,283,142</td>
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<td>Weightlifting</td>
<td>8.1</td>
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<td>Baseball</td>
<td>6.1</td>
<td>1</td>
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<tr>
<td>Team Handball</td>
<td>5.9</td>
<td>0</td>
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<tr>
<td>Badminton</td>
<td>5.5</td>
<td>0</td>
<td>—</td>
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<tr>
<td>Pentathlon</td>
<td>5.0</td>
<td>0</td>
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<tr>
<td>Tennis</td>
<td>4.9</td>
<td>6</td>
<td>816,740</td>
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<tr>
<td>Table Tennis</td>
<td>4.6</td>
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</table>

How much each of Team GB’s Olympic medals 'cost'

What’s the damage: The cost of Rio

<table>
<thead>
<tr>
<th>Sport</th>
<th>Gold</th>
<th>Silver</th>
<th>Bronze</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archery</td>
<td>1</td>
<td>1</td>
<td></td>
<td>$2.5m</td>
</tr>
<tr>
<td>Athletics</td>
<td>2-4</td>
<td>1</td>
<td></td>
<td>$26m</td>
</tr>
<tr>
<td>Basketball</td>
<td>1</td>
<td>0</td>
<td></td>
<td>$21m</td>
</tr>
<tr>
<td>Boxing</td>
<td>0</td>
<td>0</td>
<td></td>
<td>$3.4m</td>
</tr>
<tr>
<td>Canoeing</td>
<td>2-4</td>
<td>1</td>
<td></td>
<td>$17m</td>
</tr>
<tr>
<td>Cycling</td>
<td>5-7</td>
<td>2</td>
<td></td>
<td>$30m</td>
</tr>
<tr>
<td>Diving</td>
<td>1-2</td>
<td>1</td>
<td></td>
<td>$8.4m</td>
</tr>
<tr>
<td>Equestrian</td>
<td>1-2</td>
<td>1</td>
<td></td>
<td>$8.4m</td>
</tr>
<tr>
<td>Gymnastics</td>
<td>0-1</td>
<td>0</td>
<td></td>
<td>$4m</td>
</tr>
<tr>
<td>Hockey</td>
<td>2</td>
<td>0</td>
<td></td>
<td>$22.5m</td>
</tr>
<tr>
<td>Shooting</td>
<td>1-2</td>
<td>1</td>
<td></td>
<td>$7.6m</td>
</tr>
<tr>
<td>Swimming</td>
<td>9-11</td>
<td>10</td>
<td></td>
<td>$33m</td>
</tr>
<tr>
<td>Triathlon</td>
<td>0-1</td>
<td>0</td>
<td></td>
<td>$8.4m</td>
</tr>
<tr>
<td>Water Polo</td>
<td>0</td>
<td>0</td>
<td></td>
<td>$11m</td>
</tr>
<tr>
<td>Volleyball</td>
<td>0-1</td>
<td>0</td>
<td></td>
<td>$10m</td>
</tr>
</tbody>
</table>

NOTE: Costs do not include further funding from state Governments and other sources.
* Events still underway, updates to come.
Programme Pillars

Training/Competition

Coaching and Support

Athlete

People

Process
High Performance Cogs

Athlete’s abilities
- Ability to learn
- Motor skills

GENETICS
- Genetic defines the chances to excel in a given discipline

MOTIVATION
- Willingness to train
- Willingness to learn
- Willingness to embark on a long term journey

Coaching
- Personality and Knowledge
- Teaching Abilities
- Developing competitive attitudes

Health Services
- Diagnostic Access
- Good day to day care
- Physiotherapy/Medicine/Psychology

Scientific Support
- Optimize training
- Optimize competition
- Accelerate Learning
“The ability to display exceptionally high performance in a domain that requires skills and training " and "an innate ability, aptitude or faculty" (Collins English Dictionary).

(Williams & Reilly, 2000)
Genetics (the new “cool”)

- It is extremely improbable (0.0005%) to find a perfect polygenic profile (23 polymorphisms) for endurance performance (Williams and Folland, 2008)
- It is also extremely improbable to find individuals with a polygenic profile that impairs their ability to perform (Williams and Folland, 2008)
- Santiago et al. (2010) suggest that elite Spanish rowers might have a favourable polygenic profile as compared to “normal individuals”
- Bouchard et al. (1998;1999) showed that VO2max can be explained for 51% by genetic and non-genetic factors
- The improvements in VO2max following training are associated 47% to hereditary aspects (Bouchard et al., 1998;1999)
- ACTN3 is the only gene that shows a genotype and performance association across multiple cohorts of elite power athletes, and this association is strongly supported by mechanistic data from an Actn3 knockout mouse model (Eynon et al. 2013)
- Rankinen et al (2016- GAMES Study) did not identify a panel of genomic variants common to elite endurance athlete groups.
- Elite athletes are the result of action and interaction of genes and environmental stimuli (e.g. Coaching/motivation/support etc.)
Realistic Expectations

http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0170744
How do TOP performers develop and when?


http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0170744
Starting age of Olympic Athletes (Athens 2004 data)

- Athletics (14.0 ± 4.0; 387)
- Shooting (15.3 ± 5.3; 250)
- Wrestling (11.2 ± 3.3; 248)
- Basketball (11.1 ± 2.9; 89)
- Hockey (8.9 ± 3.5; 167)
- Overall (11.5 ± 4.6; 4,455)
- Rowing (15.4 ± 3.1; 283)
- Swimming (8.1 ± 3.1; 226)
- Base-/Softball (10.4 ± 4.6; 98)
- Handball (11.1 ± 3.2; 102)
- Volleyball (13.8 ± 4.3; 125)

Vaeyens et al. (2009)
Realistic Expectations

- The introduction of performance funnels has been a good step to map progressions
- It helps defining realistic outcomes
- Improves the ability to justify funding
- Provides focus for athletes’ support
Creating the environment for athletes

- Selecting the right talents to invest on
- Accessibility to venues/competitions/sponsors
- Career expectations and opportunities
- Religious/Behavioral norms
- Socioeconomic Background – Family history
- Surround them with GOOD/RELIABLE/TRUSTED people
- Is Athletics all they have got?
Understanding the athletes of today and tomorrow

Chart 1: An overview of the working generations

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Formative experiences</td>
<td>Second World War, Rationing, Fixed-gender roles, Rock 'n' Roll, Nuclear families, Defined gender roles — particularly for women</td>
<td>Cold War, Post-War boom, &quot;Swinging Sixties&quot;, Apollo Moon landings, Youth culture, Woodstock, Family-oriented</td>
<td>End of Cold War, Fall of Berlin Wall, Reagan / Gorbachev, Thatchersism, Live Aid, Introduction of first PC, Early mobile technology</td>
<td>9/11 terrorist attacks, PlayStation, Social media, Invasion of Iraq, Reality TV, Google Earth, Glastonbury</td>
<td>Economic downturn, Global warming, Global focus, Mobile devices, Energy crisis, Arab Spring, Produce own media, Cloud computing, Wiki-leaks</td>
</tr>
<tr>
<td>Percentage in U.K. workforce*</td>
<td>3%</td>
<td>33%</td>
<td>35%</td>
<td>29%</td>
<td>Currently employed in either part-time jobs or new apprenticeships</td>
</tr>
<tr>
<td>Aspiration</td>
<td>Home ownership</td>
<td>Job security</td>
<td>Work-life balance</td>
<td>Freedom and flexibility</td>
<td>Security and stability</td>
</tr>
<tr>
<td>Attitude toward technology</td>
<td>Largely disengaged</td>
<td>Early information technology (IT) adaptors</td>
<td>Digital Immigrants</td>
<td>Digital Natives</td>
<td>&quot;Technoholics&quot; — entirely dependent on IT; limited grasp of alternatives</td>
</tr>
<tr>
<td>Attitude toward career</td>
<td>Jobs are for life</td>
<td>Organisational — careers are defined by employers</td>
<td>Early &quot;portfolio&quot; careers — loyal to profession, not necessarily to employer</td>
<td>Digital entrepreneurs — work &quot;with&quot; organisations not &quot;for&quot;</td>
<td>Career multiskills — will move seamlessly between organisations and &quot;pop-up&quot; businesses</td>
</tr>
<tr>
<td>Signature product</td>
<td>Automobile</td>
<td>Television</td>
<td>Personal Computer</td>
<td>Tablet/Smart Phone</td>
<td>Google glass, graphene, nano-computing, 3-D printing, driverless cars</td>
</tr>
<tr>
<td>Communication media</td>
<td>Formal letter</td>
<td>Telephone</td>
<td>E-mail and text message</td>
<td>Text or social media</td>
<td>Hand-held (or integrated into clothing) communication devices</td>
</tr>
<tr>
<td>Communication preference</td>
<td>Face-to-face</td>
<td>Face-to-face ideally, but telephone or e-mail if required</td>
<td>Text messaging or e-mail</td>
<td>Online and mobile (text messaging)</td>
<td>Facetime</td>
</tr>
</tbody>
</table>

*Percentages are approximate at the time of publication.
WORKING WITH “CONNECTED” ATHLETES
Social Media Risks and Benefits

Risks
- Cyber Bullying / Online Harassment
- Sexting
- Facebook Depression
- Privacy Breach Issues

Benefits
- Socialisation
- Communication
- Enhanced Learning Opportunities
- Access to Information
- Creating Challenges
Athletes Actively Engaged
Creating the environment for coaches and support staff

- **Athlete (Gladiator)**
  Maximus Decimus Meridius

- **Coach / Trainer**
  Antonius Proximo
Evolution of Coaching

Sport Tradition and Culture

Training Programme
Sports Science?
I see more gobbledygook and sciency stuff called “sports science” going on today that ever in my years as athlete and coach. Has anyone taken a step back and honestly assessed where we are going with all this? Everybody and anybody who administers a wellness survey or monitors some physiological function now calls themselves a sports scientist. Over the course of my career I have had some interactions with many of these people and I think they have a pretty good idea about what they do.

- Clash of culture?
- Evolution of the professions?
- Lack of understanding of roles and responsibilities?
- Non impactful Science?
- Art=Guru?
### Table II. Participants' perceived sources of last thing they had learned or found useful.

<table>
<thead>
<tr>
<th>Raw data theme</th>
<th>No. (%)</th>
<th>Lower-order theme</th>
<th>No. (%)</th>
<th>Umbrella theme*</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coaching course</td>
<td>48 (13.45)</td>
<td>Formal coach education</td>
<td>88 (24.65)</td>
<td>Formal learning</td>
<td>88 (24.65)</td>
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<td>University/college course</td>
<td>40 (11.2)</td>
<td>Attending CPD activities</td>
<td>22 (6.44)</td>
<td>Nonformal learning</td>
<td>23 (6.44)</td>
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<tr>
<td>Workshop/clinic</td>
<td>14 (3.92)</td>
<td>Effective planning</td>
<td>11 (3.43)</td>
<td>Development</td>
<td>38 (11.84)</td>
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<tr>
<td>Conference</td>
<td>9 (2.52)</td>
<td>Coaches/colleagues</td>
<td>138 (38.66)</td>
<td>Informal learning</td>
<td>246 (68.91)</td>
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<tr>
<td>Watching others</td>
<td>22 (6.18)</td>
<td>Reading</td>
<td>29 (8.12)</td>
<td>&quot;Ologies&quot;</td>
<td>26 (8.1)</td>
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<tr>
<td>Mentor</td>
<td>16 (2.83)</td>
<td>YouTube</td>
<td>7 (1.96)</td>
<td>Performance analysis</td>
<td>11 (3.43)</td>
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<tr>
<td>Sport scientist</td>
<td>8 (2.24)</td>
<td>Coaching experience</td>
<td>23 (6.44)</td>
<td>Coaching tool or technology</td>
<td>7 (2.18)</td>
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<td>Online social networks</td>
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<td>Technical knowledge</td>
<td>29 (8.03)</td>
<td>Technical knowledge</td>
<td>29 (8.03)</td>
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<td>Internet specified</td>
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<td>Tactical knowledge</td>
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<td>Tactical knowledge</td>
<td>15 (4.36)</td>
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<td>Specific website</td>
<td>7 (1.96)</td>
<td>Self-awareness</td>
<td>14 (4.36)</td>
<td>Self-awareness</td>
<td>14 (4.36)</td>
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<td>YouTube</td>
<td>7 (1.96)</td>
<td>Athlete development</td>
<td>24 (7.48)</td>
<td>Athlete development</td>
<td>24 (7.48)</td>
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<td>Coaching experience</td>
<td>23 (6.44)</td>
<td>Physiological</td>
<td>7 (2.18)</td>
<td>&quot;Ologies&quot;</td>
<td>7 (2.18)</td>
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<td>Reflection</td>
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<td>Biomechanics</td>
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<td>Reading</td>
<td>16 (4.48)</td>
<td>Specific new drill</td>
<td>32 (9.07)</td>
<td>Specific new drill</td>
<td>32 (9.07)</td>
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<tr>
<td>Use of coaching aids</td>
<td>6 (1.68)</td>
<td>Skill acquisition</td>
<td>16 (4.36)</td>
<td>Skill acquisition</td>
<td>16 (4.36)</td>
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<td>Books/magazines</td>
<td>23 (6.44)</td>
<td>Communication</td>
<td>34 (9.59)</td>
<td>Communication</td>
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<td>Academic journal</td>
<td>6 (1.68)</td>
<td>Specific coaching method or technique</td>
<td>101 (21.46)</td>
<td>Specific coaching method or technique</td>
<td>101 (21.46)</td>
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</tbody>
</table>

*Note: Numbers and percentages relate to stand-alone meaning units generated during data analysis.

### Table V. Last thing participants' perceived they had learned or found useful for their coaching.

<table>
<thead>
<tr>
<th>Raw data theme</th>
<th>No. (%)</th>
<th>Higher-order theme</th>
<th>No. (%)</th>
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</thead>
<tbody>
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<td>Specific coaching method or technique</td>
<td>101 (21.46)</td>
<td>Pedagogy</td>
<td>212 (44.04)</td>
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<td>Communication</td>
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<tr>
<td>Specific new drill</td>
<td>32 (6.46)</td>
<td>32 (6.46)</td>
<td></td>
</tr>
<tr>
<td>Skill acquisition</td>
<td>16 (3.23)</td>
<td>16 (3.23)</td>
<td></td>
</tr>
<tr>
<td>Effective planning</td>
<td>31 (6.23)</td>
<td>31 (6.23)</td>
<td></td>
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<tr>
<td>Performance analysis</td>
<td>21 (4.23)</td>
<td>21 (4.23)</td>
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<tr>
<td>Coaching tool or technology</td>
<td>7 (1.42)</td>
<td>7 (1.42)</td>
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<tr>
<td>Technical knowledge</td>
<td>29 (5.89)</td>
<td>29 (5.89)</td>
<td></td>
</tr>
<tr>
<td>Tactical knowledge</td>
<td>15 (3.06)</td>
<td>15 (3.06)</td>
<td></td>
</tr>
<tr>
<td>Self-awareness</td>
<td>14 (2.84)</td>
<td>14 (2.84)</td>
<td></td>
</tr>
<tr>
<td>Athlete development</td>
<td>24 (4.88)</td>
<td>24 (4.88)</td>
<td></td>
</tr>
<tr>
<td>&quot;Ologies&quot;</td>
<td>71 (14.23)</td>
<td>71 (14.23)</td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td>29 (5.89)</td>
<td>29 (5.89)</td>
<td></td>
</tr>
<tr>
<td>Physiology</td>
<td>7 (1.42)</td>
<td>7 (1.42)</td>
<td></td>
</tr>
<tr>
<td>Biomechanics</td>
<td>2 (0.41)</td>
<td>2 (0.41)</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Numbers and percentages relate to stand-alone meaning units generated during data analysis.

### Table VI. Participants' perceptions of what they need to know more about to be a better coach.

<table>
<thead>
<tr>
<th>Raw data theme</th>
<th>No. (%)</th>
<th>Higher-order theme</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coaching</td>
<td>79 (23.51)</td>
<td>Pedagogy</td>
<td>154 (45.83)</td>
</tr>
<tr>
<td>Skill acquisition</td>
<td>34 (10.12)</td>
<td>&quot;Ologies&quot;</td>
<td>71 (21.13)</td>
</tr>
<tr>
<td>Communication</td>
<td>29 (8.63)</td>
<td>&quot;Ologies&quot;</td>
<td>71 (21.13)</td>
</tr>
<tr>
<td>&quot;Pedagogy&quot;</td>
<td>1 (0.29)</td>
<td>&quot;Ologies&quot;</td>
<td>71 (21.13)</td>
</tr>
<tr>
<td>Performance analysis</td>
<td>6 (1.79)</td>
<td>&quot;Ologies&quot;</td>
<td>71 (21.13)</td>
</tr>
<tr>
<td>Tactical knowledge</td>
<td>2 (0.60)</td>
<td>&quot;Ologies&quot;</td>
<td>71 (21.13)</td>
</tr>
<tr>
<td>Technical knowledge</td>
<td>18 (5.36)</td>
<td>&quot;Ologies&quot;</td>
<td>71 (21.13)</td>
</tr>
<tr>
<td>Knowledge of the sport</td>
<td>10 (2.88)</td>
<td>&quot;Ologies&quot;</td>
<td>71 (21.13)</td>
</tr>
<tr>
<td>Knowledge of other sports</td>
<td>4 (1.15)</td>
<td>&quot;Ologies&quot;</td>
<td>71 (21.13)</td>
</tr>
<tr>
<td>Participant needs</td>
<td>37 (10.10)</td>
<td>Development</td>
<td>52 (15.48)</td>
</tr>
<tr>
<td>Self-awareness</td>
<td>15 (4.46)</td>
<td>Development</td>
<td>52 (15.48)</td>
</tr>
</tbody>
</table>

*Note: Numbers and percentages relate to stand-alone meaning units generated during data analysis.

Stoszowski & Collins, JSS, 2015
Education is the key to support the Journey

- Developing exchange of information between coaching and support staff help improve understanding
- Key educational opportunities need to be structured to upskill knowledge and understanding in key fundamental areas able to impact day to day activity
- Practitioners need to understand the coaching model and embrace and support it
- Coaches have to understand how science can help them
- Athletes have to improve their understanding of key aspects to improve performance and embrace specific interventions
INTEGRATION OF SCIENTIFIC SUPPORT

- Engaging to solve problems and find solutions
- Develop initiative to fill knowledge-gaps and avoid bad practice
- Develop initiatives to understand the environment better
- Capture training activities and develop the “library” of coaching sessions performed with relevant information to inform better prescription
- Assess progress of physical and technical aspects routinely to move towards more evidence based approaches
FINISHED FILES ARE THE RESULT OF YEARS OF SCIENTIFIC STUDY COMBINED WITH THE EXPERIENCE OF YEARS.
HOW CAN WE ACHIEVE INTEGRATION?

“In God we trust. All others must bring data.”
(Edward Deming)

Data
“In God we trust. All others must bring data.”
(Edward Deming)

Interaction
Support in situ to enhance coaching support

Projects
Answering Questions to improve the training process

Special Projects

Debrief
Continuously reassess the training and competition support process

Collect and Share Training and Competition Data

Day-to-day Interaction and Development of “The Coach Library”
Using technology to improve your understanding and engage athletes

TECHNOLOGY THAT ENABLES WORLD CLASS COACHING, PERFORMANCE AND SCIENCE IN THE DEVELOPMENT OF STUDENT ATHLETES

TRAINING

MONITORING

IDENTIFICATION

FUTURE

Real time & field based
Wearables
System & data integration
Digital engagement
Football performance Centre

COMPETITION

ACADEMICS

* denotes own software


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Based on the current evidence, it seems clear that evidence for acute benefits of such interventions are scarce and more work is needed to ascertain the physiological implications on a pre or peri-pubertal population.
Table 2
Beliefs about common recovery techniques by population group.

<table>
<thead>
<tr>
<th></th>
<th>Athlete</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Response count</td>
<td>%</td>
<td>Response count</td>
<td>%</td>
<td>Response count</td>
<td>%</td>
</tr>
<tr>
<td>Sleep</td>
<td>No Benefit</td>
<td>32</td>
<td>31%</td>
<td>6</td>
<td>11%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Benefit</td>
<td>70</td>
<td>69%</td>
<td>47</td>
<td>83%</td>
<td>51</td>
</tr>
<tr>
<td>Nutrition</td>
<td>No Benefit</td>
<td>43</td>
<td>42%</td>
<td>13</td>
<td>25%</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Benefit</td>
<td>59</td>
<td>58%</td>
<td>40</td>
<td>75%</td>
<td>49</td>
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<tr>
<td>Compression</td>
<td>No Benefit</td>
<td>71</td>
<td>70%</td>
<td>27</td>
<td>51%</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Benefit</td>
<td>31</td>
<td>30%</td>
<td>26</td>
<td>48%</td>
<td>23</td>
</tr>
<tr>
<td>Active</td>
<td>No Benefit</td>
<td>49</td>
<td>48%</td>
<td>13</td>
<td>25%</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Benefit</td>
<td>53</td>
<td>52%</td>
<td>40</td>
<td>75%</td>
<td>37</td>
</tr>
<tr>
<td>Contrast</td>
<td>No Benefit</td>
<td>47</td>
<td>46%</td>
<td>27</td>
<td>51%</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Benefit</td>
<td>55</td>
<td>54%</td>
<td>26</td>
<td>48%</td>
<td>23</td>
</tr>
<tr>
<td>Ice</td>
<td>No Benefit</td>
<td>58</td>
<td>57%</td>
<td>18</td>
<td>34%</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Benefit</td>
<td>44</td>
<td>43%</td>
<td>35</td>
<td>66%</td>
<td>31</td>
</tr>
</tbody>
</table>

- Significant differences between athlete populations at p < 0.01 for No Benefit.
- Significant differences between athlete populations at p < 0.05 for No Benefit.
WHO DO YOU INVOLVE?

**Pros**: Quick/Organised  
**Cons**: Return for investment/PR

**Pros**: Equipment/Knowledge access  
**Cons**: Innovation constraints/sometimes old fashioned approaches

**Pros**: Scientific Knowledge  
**Cons**: Too slow, business model limited, want to tell the World about it

Business  
Institutes  
Academia  
Athlete
Sports Specific Work-Plan for Staff supporting a group of athletes

Literature Review and Fact Finding
- Literature review with reference to specific groups
- Populate Mendeley repository
- Observe and analyse training
- Find/read Coaching Manuals/Books
- Regular meetings with coaching team: focus on language/jargon/terms

Develop and Define the performance model
- From Lit review and information define the model
- Help the coach in clarifying performance aspects
- Develop unified model
- Educate the athletes and all the support team on “OUR PERFORMANCE MODEL”
- Help the coach build “the library”

Develop and define how to implement science
- Define how do we assess progression within the model
- Start assessing athletes and check progress
- Gather information in training: what works and what does not work
- What is realistic/good to measure and what is not
- Revise and debrief continuously
WORKFLOW

Performance needs/model

Define the intervention

Develop the training programme or intervention

Analyse Athlete’s level
Or his/her situation

Define the characteristics and timing of the intervention

Control/Review effectiveness
Individualise intervention
Creating the environment for success in Sport

- **Freshness**
  - Finding surprising solutions
  - Being comfortable with the unpredictable

- **Passion**
  - Energy givers – not takers

- **Action**
  - Making things happen

- **Love**
  - In it together, cannot do it alone anymore

- **Bravery**
  - The willingness to experiment and try new things. Saying like it is and avoiding the bullshit, having the guts to say “I don’t know” and be prepared to go find out. Have the ability to entertain difficult conversations

- **Willing to Learn**
  - It's what you learn after you know it all that counts.

- **Having clear Structures/Roles and Responsibilities and vision**
  - Making sure noses are pointing in the same direction
  - Avoiding too many cooks

*Insanity: doing the same thing over and over again and expecting different results.*

Albert Einstein
IDENTIFYING THE RIGHT SUPPORT STAFF

Appropriate Qualifications
This is a necessary requirement in order to practice their profession. Are they qualified in what they are supposed to do?

Relevant Experience
How experienced are they in the field and have they worked in this environment?

Team player
Can they work with others? It is not about them, it's all about the programme

Adaptability
Can they adapt to the changing environment?

Influencer
Can they positively influence the programme?
SUPPORTING THE JOURNEY

• MAKING SURE THE ATHLETE IS HEALTHY ON THE START LINE AND IN THE BEST POSSIBLE CONDITIONS TO DO HIS/HER BEST

• LOOKING AFTER HIS/HER PREPARATION AND COMPETITION ACCESS
  • Failures should be seen as learning opportunities for athlete and staff

• CAPTURING KNOWLEDGE OF THEIR JOURNEY
  • To make sure support can be better for the next generation

• PREPARE THEM FOR WHAT HAPPENS AFTER ATHLETICS
  • Showing that we care

• ENGAGE WITH THEM TO USE THEIR WISDOM AFTER THEY STOP COMPETING

• MAKE SURE YOU SURROUND THEM WITH GOOD/PASSIONATE PEOPLE ABLE TO HELP SUPPORT THE JOURNEY
OPPORTUNITIES

• USING MODERN PLATFORMS FOR KNOWLEDGE SHARING AND TALENT ID?

• CAPTURE AND SHARE TRAINING DIARIES
  • Training myths are rife about crazy sessions maybe we can reduce injuries?

• CROWD SOURCING ANALYSIS
  • Can we know more about the competition demands/share the data let the “crowd” analyse/experiment to come up with better performance models?

• CAN WE USE TV CONTRACTS TO GET A BETTER UNDERSTANDING OF COMPETITIVE DEMANDS?
Training quality
Knowledge of Competition

Coaching personality and knowledge
Facilities
Health Support

Genetic makeup
Athlete’s abilities

Motivations
Scientific Support

Competition
Concluding Remarks

• There is no perfect “recipe” what works in some countries does not work in others. However there are some consistent aspects which should be considered

• Having a centre of excellence/high performance centre provides focus, allows the possibility of housing the best support service and provides a sense of identity. When all goes wrong it is the “safe-house”

• Education is key to facilitate integration of expertise to support athletes. New technology can help reducing costs and making it easier, but it is a fundamental investment for the Athletics community in your country to make sure correct information (commercially unbiased) is transmitted to your athletes/coaches/staff

• Coaching is changing as a profession. With more government/private funding institutions hiring coaches there are more skills needed in addition to coaching skills

• We need to be aware of the fact that this and the future generation of athletes and coaches requires levels of interactions which are different from past generations and therefore we have to embrace technology and social media to our advantage

• Athletes nowadays travel with entourage of expertise which has challenges accessing facilities during competitions, how can we make this possible (see performance analysts in other sports).
Thank You

Marco.cardinale@aspire.qa
Marco_Cardinale