

**Elite Human Performance in the Australian Army: lessons from the Soviet Sports System**

Major Pete J Tarling

Battery Commander 108th Battery RAA

The 2nd Battalion, the Royal Australian Regiment

3rd Brigade Professional Military Education – the *Lavarack Papers* submission.

Submission Date: 01 September 2017

# **Elite Human Performance in the Australian Army: lessons from the Soviet Sports**

## **System**

Major Pete Tarling

## **Introduction**

The Australian Army generally considers its people as its resources and capability. With this in mind, soldiers should ideally be at the elite level of human performance. This would assure a greater probability of success in combat, and reduce the potential of injury in training and combat. It would also safeguard physical longevity – the Army gaining greater efficiency and usage of its key resource. In reality the Army does not have a proven system or service-wide culture that develops cutting-edge levels of human performance. The Army does not adequately develop, prepare, or sustain elite levels of fitness as the norm. Biased, uneducated opinions and views are held by a great many of all ranks. Compared to elite levels of sport, the Army is well behind the times in fostering elite human performance. Resources and interest, are gradually being invested in developing human performance. There are some ways to go before the Army can generate and maintain tactical athletes fit for purpose.

This essay will highlight key aspects of a proven elite athlete development system that has some applicability to the Australian Army. This will include the background and application of the Soviet Sports System by the Union of Soviet Socialist Republics (USSR) during the 20th century, highlights of youth athlete development models in the West, consideration to the contemporary injury rates in the Army, and discussion on how aspects of the Soviet Sports System models could be conceptually applied to the Australian Army through the Force Generation Cycle. The application lessons from the Soviet Sports System would better prepare soldiers for combat and longevity.

## **Soviet and Socialist Sports Systems**

During the Cold War, the Eastern Bloc viewed elite sport as a strategic weapon, serving as part of the great Red Propaganda Machine. Dominance by socialist states in sport

on the international stage allowed the Soviets and other communists to convey the supposed superiority of their communist nations, suggesting their athletes were prime examples of their citizens under a communist regime. More recently, Russia and other former countries of the Eastern Bloc, and the People's Republic of China (PRC), have experienced doping scandals in elite international sport. It could be easy to attribute the sporting success of socialist states (and their successor states) to just their drug programs. In reality, it was just one facet of a national system designed to achieve elite levels of performance and sporting success. The origin of this system was the preparation of citizens for military and labour service on behalf of the state.

The USSR joined the International Olympic Committee in 1951, making its Olympic debut at the 1952 Helsinki Games. Communist states dominated the 1952 games. A process had already been created with an aim of generating elite athletes from the youth of the USSR. The centralised government had already implemented a nation-wide human performance development system across the entire federation of the USSR in the 1930s. This system utilised a USSR-wide physical education program that was focused towards preparing its citizens for military service<sup>1</sup>, and improving the overall fitness of citizens. This system was known as *Ready for Labour and Defence of the USSR*. This system aimed to produce a more physically useful workforce and military force from the population. A parallel system was developed that identified and then developed gifted athletes, known as the *United Sports Classification System of the USSR*. These systems as part of a larger over-arching system were implemented across the USSR, to improve the labour force and identify gifted athletes from the population for further development.

As part of the Soviet Sports System, state sponsored multi-sport associations were established that were related to specific occupations, with subordinate regional clubs. The sporting associations included *Dynamo*, linked to the USSR security services, the *CSKA* (from the Russian abbreviation for Central Army Sports Club) linked to the USSR military, and the *DOSOs* (from the Russian abbreviation for Voluntary Sports Societies) representing trade unions. Additionally, a paramilitary sports association known as the *DOSAAF* (from the Russian abbreviation for the Voluntary Society for Cooperation with Army, Aviation, and

---

<sup>1</sup> Riordan (2002), pp 51-52.

Navy) was also established to prepare citizens as military reserves. The sporting associations had clubs widespread through the USSR, and included coaches of various disciplines. Up until 1986 professional athletes were not permitted to participate in the Olympics. The clubs from Dynamo, CSKA, and the DSOs allowed for state-sponsored athletes. These athletes were all intents and purposes professional athletes categorised as amateur athletes, allowing them to compete at the Olympics. The sports associations, pioneer organisations (similar to humane and voluntary recreational organisations), and educational institutions then established children's and young people's sports schools (CYPSSs)<sup>2</sup>.

Talent identification occurred during the early schooling years, with teachers often functioning as physical education staff and sports coaches. Children also participated in a series of youth *spartakiads*, or tournaments annually, with an eerie semblance of the actual Olympic Games. Youth *spartakiads* were organised at local school, town, regional, republic, and national levels. The CYPSSs had over 800 000 children involved in their activities across 3 000 schools<sup>3</sup>. The CYPSSs in the primary schooling years selected students for special boarding schools during their secondary years, oriented to a particular sport. Special sports boarding schools were created at the secondary school level, to further develop talented children in a specific sport<sup>4</sup>. Students were given a strong physical education and those with elite athletic traits were further developed, with lower performers filtered out during the developmental years<sup>5</sup>. By the 1970s, these special sports boarding schools consisted of 90 000 students across 3 000 schools<sup>6</sup>. The USSR utilised primary schools to establish a foundation and identify talent, that then in turn fed into secondary school boarding schools for a specialised sport. As youth athletes developed they were able to effectively transition into state-sponsored training in the over-arching multi-sports association, representing a certain occupation.

An important aspect of the development of youth athletes in the Soviet Sports System was the emphasis on *general physical preparation* (GPP) to develop a general athletic foundation. A greater emphasis on *specific physical preparation* (SPP) occurred later as

---

<sup>2</sup> Metsä-Tokila (2002), p 199.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid, p 198.

<sup>5</sup> Riordan (1980), p 247.

<sup>6</sup> Metsä-Tokilla (2002), p 199.

young athletes developed athletic abilities geared towards a specific sport. GPP does not emphasise a particular sport or skill, but provides a large variety of athleticism. SPP on the other hand is the training preparation specific to a particular sport. GPP was notably important to the Soviets during childhood and the years of sexual maturation (13-16 years). During these ages it was used to develop physical qualities such as power, dexterity, flexibility, endurance, whilst developing a youth's connective tissue<sup>7</sup>. The Soviets understood that connective tissue develops slower than muscle tissue, so connective tissue development was a higher priority than strength development<sup>8</sup> at these ages. The athletes of the Soviet Sports System were products of a very deliberate physical preparation program. This program was designed to build various physical qualities prior to eliciting elite performance at the right age to be competitive in their sport. Elite athletes were not simply trained in a single discipline their whole life. These long term programs' early emphasis on GPP prepared them for the substantial specialised training they would receive closer to and during adulthood.

Young athletes did not simply play one sport throughout their development, but were exposed to a large variety of sports and games to develop generalised athleticism. As these young athletes showed particular ability or promise, and met set physical parameters, they would then be selected for a specific sport. The age at which they were specialised varied with the sports, based on ideal age and attributes for competitions. Gymnasts, for example, began specific gymnastic training earlier than weightlifters. In addition to the CYPSS, special sports schools, and multi-sport associations, a developmental and classification system was created. The classification system, known as *United Sports Classification System of the USSR* or the *Process of Acquiring Sports Mastery*<sup>9</sup>, consisted of performance grading levels for each sport. Athletes were grouped by their qualification standard as *3rd Class*, *2nd Class*, *1st Class*, *Candidate for Master of Sports*, *Master of Sports*, and *International (or Merited) Master of Sports* as adults or teenagers<sup>10</sup>. Youth classifications were also developed - such as *Youth 2nd Class*, *Youth 1st Class* - to progress refined junior athletes into the developmental process. Developing athletes would generally progress from the lower to

---

<sup>7</sup> Medvedyev (1989), p 148.

<sup>8</sup> Ibid.

<sup>9</sup> Takano (2012), p 24.

<sup>10</sup> Ibid, p 33.

upper classes over a number of years, and specific training programs were produced for each class<sup>11</sup>.

In addition to investment in athlete development, significant investment was also made into sporting coaches, sports scientists, and exercise instructors. These occupations made up the staff necessary to develop and sustain elite athletes. These key occupations were a product of the multi-sport associations' efforts to produce elite development staff, requiring high standards of education. Students looking to become coaches, exercise instructors, and sports scientists faced formidable entrance tertiary exams, followed by detailed scientific study at universities. Only the best and brightest were able to progress into these occupations in the USSR<sup>12</sup>. A common study program was implemented in the first two years of study, with students able to then specialise in coaching, sports science, or exercise instruction. Those who wished to become coaches were required to achieve a specific level of the *United Sports Classification System of the USSR* for the sport they wished to coach, many of them former or current elite athletes themselves. Weightlifting coaches for example, were required to achieve the 2nd Class standard for their bodyweight at the start of their third year – indicating some level of talent in the sport. A classification system was also developed for coaches, similar to the athlete system. A coach's ability to develop talented athletes, based on their sporting performances, saw them elevated through a similar system to their athletes.

Detailed sports science research was conducted on the athletes in the Soviet Sports System. From this came large amounts of data converted into a large body of knowledge that covered all aspects of exercise physiology. Training and recovery was controlled and tracked, with the most successful athletes forming a sample of information that was able to inform the schooling system training. The result of the Olympics and other competitions in turn updated the standards of the levels of the classification system. The information included such aspects as detailed exercise prescriptions, and the ideal body dimensions for athletes of specific sports. Famously it led to two key developments: the conceptual theory on the arrangement of training over the short to long term, known as *periodisation* (*periodization* in the United

---

<sup>11</sup> Medvedyev (1989), pp 1-4.

<sup>12</sup> Takano (2012), p 21.

States); and supplementation and recovery programs that included doping protocols.

Periodisation is a training concept that is concerned with the arrangement of training. Periodisation is the organisation of training into cycles, with the planned manipulation of training variables of specificity, volume, and intensity<sup>13</sup>. Its development is usually credited to Russian physiologist Leo Matveyev in the 1960s<sup>14</sup>, although some speculate of its existence in the 1940s, developed by Hungarian L. Nadori<sup>15 16</sup>. Regardless of its exact origins, the application of periodisation was a key part of the Soviet Sports System. Using periodisation, the Soviets would plan out training based on scheduled competitions, looking to provide the highest levels of performance on competition days or during competitive seasons.

The periodisation model follows that you do not train the same way day in, day out, but instead start with higher volumes at lower intensities initially building a performance base. Fatigue accumulates with the higher levels of volume at the start of cycle, and then is gradually dissipated as the volume is decreased and intensity of training increased. A central idea being that performance will develop as fatiguing volumes reduce. Training also becomes more specific closer to an actual competition. Periodisation is widely accepted and practiced today in elite sports world-wide, although there is suggestion it may not be as scientifically sound as widely believed<sup>17</sup>. Periodisation, also known as traditional periodisation, has been further adapted and refined, with additional models being proposed such as *block periodisation*. The different periodisation models provide different viewpoints and models for arranging training. Throughout a program that utilised periodisation, exact volumes and duration of training were recorded by the Soviets, and detailed nutrition and recovery programs were also implemented. The area that is not widely detailed is the exact prescription of doping, and its impact on periodised training as a co-founding variable.

An aspect of the recovery programs that is controversial is the widespread use of doping by the Soviets. The Soviets understood that doping alone did not create results, but was used as part of the larger system that generated elite athletes. Importantly, Olympic

---

<sup>13</sup> Baechle, & Earle (2008), p 508.

<sup>14</sup> Ibid.

<sup>15</sup> Haff (2004), p 54.

<sup>16</sup> Rippetoe, Baker, & Bradford (2013), p 27.

<sup>17</sup> Afonso, Nikolaidis, Sousa, & Mesquita (2017).

doping tests originating in the 1960s were focused on detection of stimulants, such as amphetamines and cocaine. It was not until 1975 that anabolic steroids were actually banned by the International Olympic Committee. The ban only applied to use (or detection) in competition, and it was not until the 1980s that anabolic steroids were banned for out of competition use as well. Whilst doping testing existed, it was rudimentary, inconsistent, and not necessarily well-enforced. The Soviets capitalised on these flaws, applying doping regimes that were designed to gain further advantage with their athletes. The use of anabolic steroids allowed for greater tolerance of training loads and increased recovery. As tests improved in tolerance and capability, better protocols were developed to beat the tests.

Whilst the USSR may have created the Soviet Sports System, it was also applied as a model for some other socialist countries, notably the German Democratic Republic (GDR), and the PRC. Whilst the GDR no longer exists after the reunification of Germany, it and the PRC have found great international sporting achievement using a similar, long-term and all encompassing model, with success in different areas and at different times. The GDR gained sporting acclaim with its dominance at the Olympics, from a population of approximately 16 million. Its dominance occurred during the 1970s and 1980s, using the Soviet model that included extensive doping, especially of females. Whilst they had widespread doping protocols, they returned very few positive tests for drugs. Whilst the USSR developed the Soviet Sports System, the GDR further applied this system, with the best use of coaching and facilities, enhanced with the use of computing<sup>18</sup>. The PRC adapted the original Soviet model with its own character. It has produced hundreds of thousands of young elite athletes in a short time frame<sup>19</sup> from its population of 1 billion. The PRC has seen recent success at the Summer Olympics, placing between 1st and 3rd in medal tallies from 2000 to 2016. The PRC has begun to reap the rewards of this system in the modern era. The success of the Soviet Sports System is still evident today: the former GDR still has a higher cumulative total of Olympic medals from its 40 years of limited existence than Australia does after 100 years.

The USSR developed a nation-wide elite athlete development system that encompassed talent identification and youth development in primary school, specialisation in

---

<sup>18</sup> Green, & Oakley (2001), pp 254-256.

<sup>19</sup> Hong, Wu, & Xiong (2005).



secondary school, and sustainment of adult elites through nationalised multi-sport associations. This system detailed training scheduling over multiple years of development and, was reinforced by coaching and sports science that included doping protocols. Notably, the Soviet Sports System was founded in an over-arching system designed to generate higher levels of physical performance in the military and physical labour jobs. In practice, the Soviet Sports System was applied as a strategic tool to highlight the supposed superiority of the socialist nations' citizenry through international sporting competition such as the Olympics.

Long term programs modelled on the Soviet Sports System are employed today, notably in the PRC, as well as former Eastern Bloc states. The Soviet Sports System is now simply called the Russian Sports System in the Russian Federation. Aspects of the Soviet Sports System have also been applied in the West. The current Australian elite sporting model draws heavily on the centralised control and national policy aspects of the Soviet Sports System. This application led to the development of the Australian Institute of Sport (AIS), after a humiliating performance at the 1976 Olympics. It is difficult to practically apply much of the long term system developed in socialist countries, and even our own national sports model to the Australian Army. Some aspects of the Soviet Sports could still be incorporated in the Australian Army to improve its human performance levels.

### **Youth athlete development models in the West**

Elite athletes of Soviet Sports System were efficiently developed in their youth to be at the highest performance level. In the West, other systems have been developed with a similar idea, albeit not as centrally controlled or as detailed as the Soviet Sports System.

Long term athlete development (LTAD) and the Development Model of Sport Participation (DMSP) are key models more commonly known in the West for youth athlete development. LTAD, developed by Balyi, proposes key stages of development of athletes, with different emphasises by stage<sup>20</sup>. Its evidence, much like periodisation, is not clear cut

---

<sup>20</sup> Balyi, Way, & Higgs (2013).

and has been suggested to be conflicting and never evaluated<sup>21</sup>. Another model, DMSP, is suggested to have more credibility and application for youth athletic development<sup>22</sup>. Similar to how the Soviet Sports System looked to develop youths into elite champions, these two models consider long term developmental requirements of children for sporting success as adults. They both give more generalised direction than the detailed and scientific specifications employed by the Soviets.

Regardless of the model, it is generally accepted that youths should have diverse sporting participation, that later transitions to specialisation, very much like the Soviet Sports System pioneered. By developing youth athletes to high levels early, in a progressive manner, the best levels of performance can be achieved, ideally with the minimal risk of injury.

### **Injury in the Australian Army**

New recruits to the Australian Army come from diverse backgrounds, not necessarily undergoing a deliberate program of athletic or physical development in their youth. Whilst there are pre-entry fitness requirements, they are not particularly onerous. This sees citizens, between the ages of 17 – 55, entering an occupation many would consider to be physically demanding, without necessarily having the physical development required. New soldiers, regardless of age, may not have the physical robustness required for longevity and elite performance in the Army. They may also be more prone to injuries from physical training and sport. Whilst injury prevention and reduction is an important strategy for safety, soldiers who have not undergone proper physical development in their youth are likely to struggle with the physical training loads and intensities required of elite performance.

Whilst injuries from training are no surprise to the Australian Army, it is not generally well known. A key study collated data from 1987 – 1991 on reported injuries in the Australian Army<sup>23</sup> and found an average rate of 161 injuries per 1000 soldiers per year in 1991 – or 16.1%. When considering corps, the Royal Australian Infantry collectively had a rate of

---

<sup>21</sup> Côté, & Hancock (2016), p 51.

<sup>22</sup> Ibid.

<sup>23</sup> Rudzki (2000).

26.2%<sup>24</sup>, 10.1% higher than the Army average. Injuries presented to the Physiotherapy Department at Lavarack Barracks from 1987 to 1992<sup>25</sup> found the local injury rate of Lavarack Barracks to be 19.3%<sup>26</sup>, 3.2% higher than the Army average. Additionally, most injuries at Lavarack Barracks during this period, as well as most sport-related injuries, occurred during March to September, the winter sports season<sup>27</sup>. Considering injuries across the Australian Defence Force (ADF), physical training (PT) accounted for 18% of reported casualties, and sports collectively accounted for 32%<sup>28</sup> - totalling 50% of all injuries. Poor education and understanding in physical training, over enthusiasm and unsafe participation, high levels of competitiveness, and conflict over training time available are potential factors that may have influenced these injury rates<sup>29</sup>. Regardless of the cause, the amount of injuries related to PT and sport is significant, suggesting the processes used in contemporary times are severely lacking. How PT and sport is organised, the detailed manipulation of variables of training programs, and the lack of a concentrated physical development model potentially have all contributed to these injury rates.

An important consideration in periodisation is the manipulation of variables to improve athletic performances, whilst preventing or reducing over-training. These considerations assist in minimising risk of injury. It has been found that Australian Army recruits have in the past displayed some symptoms of over-training, and only gained modest improvements in upper-body strength and explosive power, with a reduction in aerobic endurance during recruit training<sup>30</sup>. Also, injuries during recruit training increased the odds of a recruit failing to complete training by a factor of 10<sup>31</sup>. These collective findings suggest the Australian Army has historically had a poor system for developing human performance, prone to causing injuries, that is relatively inefficient.

Elite sport is not completely free of injuries in training either. In elite rugby league it has been found that there is a correlation between training load and injury rate – the more

---

<sup>24</sup> Ibid.

<sup>25</sup> Gruhn, Leggat, & Muller (1999).

<sup>26</sup> Ibid.

<sup>27</sup> Ibid.

<sup>28</sup> Goodall (2004).

<sup>29</sup> Ibid, p 60.

<sup>30</sup> Booth, Probert, Forbes-Ewan, & Coad (2006).

<sup>31</sup> Pope, Herbert, Kirwan, & Graham (1999).

training load players are exposed to the, the greater the incidence of injuries<sup>32</sup>. This identifies a dilemma – it is difficult to find the ideal training volume that enhances performance whilst reducing the rate of injuries; only by *not* conducting PT could the injuries it causes be completely reduced to zero, an illogical step to take. Elite sport generally controls and monitors the training loads applied to elite athletes, assisting in prevention of injuries, and identifying optimum training load. Additionally, elite athletes have generally undergone deliberate physical development in a progressive manner in the youth prior to achieving elite status, something soldiers may not necessarily have.

Whilst full time soldiers are technically always serving, elite athletes are in a similar circumstance – they do not cease their elite status in off training periods. It could be argued that some elite athletes are held to higher level of discipline in their off duty periods. At the end of a training day they are not simply free to train as they please outside of hours – aspects of training and recovery are tightly controlled as best practice. This is contrary to the ADF, which actively encourages participation in sport, with no real active form of control or monitoring. Sport in the Australian Army is also organised on a rather ad-hoc basis; it is not trained deliberately across the Army. Soldiers are not necessarily properly prepared for the different physical traits required in the sport or athletic event they may compete in at short notice.

With high performance comes a risk of injury that must be considered when developing programs for sporting athletes and soldiers alike. Consideration for the training load, and training program design are critical for success, with deliberate programming a must. Additionally, whilst sport is strongly encouraged by the Army collectively, it does more harm than good due to its poor arrangement. The lack of proper preparation of soldiers for sport causes injuries that reduces their availability for their true purpose: combat. Participation in sport should not come at the cost of combat effectiveness.

## **Discussion and application to the military**

---

<sup>32</sup> Gabbet, & Jenkins (2011).

Some aspects of the Soviet Sports System and current Western athlete development models are applicable to the Australian Army. Service in the Army does not commence with talent identification and priming of selected gifted youths, but relies on the general public to apply to join. This already starts the Army off on the wrong foot.

Elite athletes under the Soviet Sports System commenced their development in preparation for sporting competition young. Whilst many children were ear-marked, eventually only the most highly successful were able to make it to the elite level of competition. The Australian Army does not have a pool of gifted youths to develop over the course of their growth and development. Normal citizens are being recruited from varied (possibly including nil) athletic backgrounds. The Australian Army, as part of the ADF, must also be careful in implementing recruiting policies that are discriminatory. It has until recently restricted the age of new applicants (for example potential helicopter pilots were required to be 27 or younger) and prohibited women from combat roles. These previous policies could be considered violations of human rights and classed as discriminatory. The removal of both gender and age restrictions on recruits has resulted in the implementation of physical employment standards for specific occupations, that can be called legally-defensible. Whilst it may seem like a logical solution, it has flaws in terms of developing elite performance.

On one-hand the Australian Army desires soldiers that are physically elite, on the other hand it cannot discriminate and must balance discharge rates to maintain its force. In elite sport, this is not the case. Athletes are grown through junior grades (in the case of many team sports such as rugby league), and then some identified as talented progress to the next level of competition, much like the Soviet Sports System overall. The size of sporting teams is usually capped in terms of positions overall or financial aspects. Not everyone who wants to be an elite athlete has the chance to be elite, resulting in only a small population making it through to the elite level.

In individual sports, qualification grades are often utilised, and athletes must achieve specific levels of performance in competition to qualify for more significant events. Both powerlifting and Olympic weightlifting have grading scales in Australia (as well as in other countries and internationally). Participants in these sports must reach set grading standards

for state, national, and international competitions. In the case of Olympic weightlifting, achieving the grading standard only enters you into a selection pool, with the governing body selecting those athletes it believes have the greatest chance of medalling at the Olympics or other international events, not those that are necessarily the strongest or best *individually*<sup>33</sup>. As the performance levels of athletes improves overall, the governing bodies simply update the grading standards, restricting the through-put.

The selection systems in elite sport can be rather complicated, perhaps too complicated to be employed by the Army after a soldier has undergone recruiting. The Army still needs the highest level of performance, so must consider different approaches to maximising the abilities of its soldiers.

Significant developments are already underway in the Australian Army in the realm of human performance: the revision of physical training instructor trade (PTI) model, trials that utilise a periodisation model in PT, the implementation of strength training programs, and creation of human performance centres. These developments could be further expanded in a bid to produce elite tactical athletes.

A key lesson from the GDR was the quality of their facilities as well as their coaching staff. The Army only has PTIs who work in this field, who are all other ranks (ORs). A significant development would be to create specialist service officers (SSOs) in the realm of human performance coaches. Ideally as full-time, uniformed, commissioned officers in Army human performance centres and potentially units. The Army currently has doctors, nurses, physiotherapists, and dentists all as tertiary qualified SSOs – they generally exist to treat soldiers after they have suffered an injury, and are not the specialists required to manage high performance. These SSOs also typically work with ORs in their realm of health as well, yet PTIs do not work with commissioned officers from the same field. An SSO Human Performance Officer could easily be modelled off the strength & conditioning coaches of elite sporting teams, requiring commensurate tertiary and practical qualifications: a degree in

---

<sup>33</sup> It is important to note Olympic weightlifting and powerlifting both utilise weight classes in competition. Both also use their own mathematically derived point scale to compare athletes in various weight classes, to determine their relative performances. You could have a greater Wilks score (powerlifting) or Sinclair coefficient (Olympic weightlifting) than a lifter in a different weight class, but they are more likely to medal in their weight class at an event due to the competitiveness of that individual weight class.

exercise science and coaching qualifications in strength & conditioning coaching<sup>34</sup>. These SSO Human Performance Officers would then be responsible for overall high performance management of a unit or formation. This would develop a body of knowledge, develop variety in training knowledge, and ensure best current practices were being implemented.

Human Performance Officers are critical to the design, monitoring, and implementation of short, mid, and long-term planned physical training plans that are in concert with the Force Generation Cycle, and higher direction. This would include the adoption of well sequenced - potentially periodised - training plans, implementation of a long term physical development program, the construction of individual programs to account for the individual differences of soldiers, useful rehabilitation and restoration programs, and the overall management of human performance. Having officers that are effectively professional Army strength and conditioning coaches is needed if human performance is to be taken seriously.

Whilst the proposal of Human Performance Officers as SSOs could be interpreted as a threat to the established system of PTIs, it is more an enhancement of the current system. PTIs are absolutely still necessary although with some modernisation to their trade model, and could perform roles similar to what they have traditionally, working as part of the same team as tertiary qualified SSOs. Just as elite sports teams and athletes have assistant coaches that work mainly in the execution of training sessions, PTIs could be retained in this system, much like medics and doctors work together as part of the health system of the Army. This would also provide a backbone of officers that in conjunction with OR PTIs to develop practical and useful policy, that could be founded on best practices and science – if researched and studied properly.

The Army currently employs Scientific Officers in the fields of research and pathology, but lacks sports scientists for detailed scientific research on high performance. Sports scientists are found in elite sports teams and sport institutes (such as the AIS), and have a different role to strength and conditioning coaches. True sports scientists conduct detailed research and data collection that is then provided to strength & conditioning coaches who then apply it practically. Obtaining credentials as a sports scientist also requires an exercise

---

<sup>34</sup> Australian Institute of Sport, (2017).

and sports science degree, but significant additional practicum in a sports science setting (not an exercise science setting) that is supervised generally by an experienced sports scientist.

Like the inclusion of a SSO Human Performance Officer, the SSO Scientific Officer role could be expanded out to include sports scientists. This would enable the Army to conduct its own detailed research on human performance with its own soldiers. Army establishments could establish relationships with a number of universities to provide opportunities for research externally, on the Army's terms, as opposed to following a particular university's agenda for research. The ability for the Army to quickly disseminate the findings of its own research on human performance would allow the organisation to adapt its human performance methods, implementing findings into practice much faster.

The Soviet Sports System was effective in its employment of sports scientists, tracking all possible variables and results of its various athletes, adapting its practices based on research, and conducting its specific research over multiple years. The success of its athletes is linked to the investment it made in detailed research of the development of its junior athletes to elite athletes. The Army could follow suit and access its entire population for human performance research, building volumes credible research with large, representative samples that consider the correlates and impacts to both performance and injury over the short, mid, and long term. This in contrast to the current evidence-based practices that flood modern exercise science literature: short term studies, using small sample sizes that are typically not presentative of the population intended, at varying standards of research design. The end result is weak studies that do not have any real utility in the long term. To conduct long-term research that is truly beneficial to the organisation, the Army needs to conduct its own research with uniformed sports scientists with larger populations of soldiers.

With revisions to staffing of the Army, a greater effort in human performance development could be made. Improving staff alone is pointless without strong central direction and policy. The Soviet Sports System was underpinned from the beginning by strong, central government policy, and the USSR took a national approach in implementing its system across its entirety. This policy had two key outcomes: prepare citizens for military service or labour, and produce elite athletes. The Army does not have the same access to the whole civilian



population, especially its children during their developmental years, and cannot implement a program that develops all of the nation's children for military service. But it can apply a developmental system on those that have been successfully recruited. A developmental model to ensure longevity, increase performance, and reduce injury should form the central core of an Army-wide policy on human performance development. The utilisation of revised human performance staff who are uniformed would be the best medium to implement this policy. An area that must be overcome is difference of opinion and individual biases; this could be overcome with a thorough education of all ranks of the Army on human performance, especially command appointments of all levels. It is important to improve not just the procedures used, but also the collective organisation's understanding of human performance development. The Army collectively should understand human performance to the degree it understands the progression through the Force Generation Cycle.

## **Conclusion**

Current advances in human performance development in the Australian Army are a step forward, but there are still ways to go. The Soviet Sports System offers insight into a historic, multi-faceted national approach that successfully produced elite athletes, albeit with the support of doping. Aspects of the Soviet and GDR systems have been adapted by the Australian Sports Commission, and Australia now has a leading elite athlete development system through the national, state, and local levels. Application of many aspects of the Soviet and other similar Sports Systems could be a significant advance in establishing elite performance levels of soldiers as tactical athletes.

A well developed and centrally controlled system that is grounded in strong policy is required for fostering a suitable culture in the Army. This is critical if the Army wants to build world class soldiers in peak performance. It should be inter-dependent to the Force Generation Cycle. Simply improving training programs and implementing injury reduction strategies is not enough. A well developed system should include detailed education on PT, cutting edge facilities, well-educated coaching staff and sports scientists, long term development models for soldiers, detailed programming design and monitoring, large scale directed research, recovery and restorative measures, as well as injury preventative and

rehabilitation measures. Additionally, the Army should reconsider which sports it values participation in, and consider including contemporary training and sporting pursuits that are intrinsically linked to improved combat performance.

It may be impossible, not to mention controversial, to apply a whole of government approach to grooming youths for military service as the Soviets did. Implementing an abridged, development program on new recruits would be of significant benefit in building athletic qualities whilst minimising injuries. This would support a reduction in medical discharges, generate more capability for those in service, as well as return soldiers to civilian life in better condition. In terms of resources, this means improved longevity, and a reduction in compensation claims and work days lost.

Key to developing and implementing elite human performance is having suitably qualified staff to implement the programs and models. PTIs are an important part, but alone are not enough if the Army wants to take high levels of human performance seriously. Tertiary qualified strength coaches and sports scientists are currently absent from the Army's establishment but are key to success for elite sporting teams and clubs. Having them as full-time commissioned officers would be of significant benefit, providing an understanding that only actual military service can. They could also lead in the development of strong, robust policy, and the implementation of best practices into the Army. Only then can the organisation be unified in developing high levels of human performance.

*Major Pete J Tarling is a Field Artillery Officer, serving as the Battery Commander of 108th Battery RAA, of the 2nd Battalion, the Royal Australian Regiment. He is a Level 1 Strength and Conditioning Coach with the Australian Strength and Conditioning Association (ASCA), a Level 1 Powerlifting Coach with Powerlifting Australia (PA), a Level 1 Sports Power Coach / Club Weightlifting Coach with the Australian Weightlifting Federation (AWF), and a CrossFit Level 1 Trainer. Along with his coaching qualifications, he holds Certificates III and IV in Fitness and is studying a Bachelor of Exercise and Sports Science.*

## References

- Afonso, J., Nikolaidis, P. T., Sousa, P., & Mesquita, I. (2017). Is Empirical Research on Periodization Trustworthy? A Comprehensive Review of Conceptual and Methodological Issues. *Journal of sports science & medicine*, 16(1), 27.
- Australian Institute of Sport. (2017). *Strength and Conditioning : AIS : Australian Sports Commission*. [online] Ausport.gov.au. Available at: [https://www.ausport.gov.au/ais/performance\\_support/careers/strength\\_and\\_conditioning](https://www.ausport.gov.au/ais/performance_support/careers/strength_and_conditioning) [Accessed 4 Sep. 2017].
- Baechle, T.R., & Earle, R. W. (2008). Essentials of strength training and conditioning.
- Balyi, I., Way, R., & Higgs, C. (2013). *Long-term athlete development*. Human Kinetics.
- Booth, C. K., Probert, B., Forbes-Ewan, C., & Coad, R. A. (2006). Australian army recruits in training display symptoms of overtraining. *Military medicine*, 171(11), 1059.
- Côté, J., & Hancock, D. J. (2016). Evidence-based policies for youth sport programmes. *International Journal of Sport Policy and Politics*, 8(1), 51-65.
- Department of Defence (2000). *Australian Defence Force health status report*. First edition.
- Gabbett, T. J., & Jenkins, D. G. (2011). Relationship between training load and injury in professional rugby league players. *Journal of Science and Medicine in Sport*, 14(3), 204-209.
- Goodall, R. (2004). Injury prevention: physical training in the Australian Army. *Australian Defence Force Journal*, (165), 49.
- Green, M., & Oakley, B. (2001). Elite sport development systems and playing to win: uniformity and diversity in international approaches. *Leisure studies*, 20(4), 247-267.
- Gruhn, J., Leggat, P., & Muller, R. (1999). Injuries presenting to Army physiotherapy in north Queensland, Australia. *Military medicine*, 164(2), 145.
- Haff, G. G. (2004). Roundtable Discussion: Periodization of Training-Part 1. *Strength & Conditioning Journal*, 26(1), 50-69.
- Hong, F., Wu, P., & Xiong, H. (2005). Beijing ambitions: An analysis of the Chinese elite sports system and its Olympic strategy for the 2008 Olympic Games. *The International Journal of the History of Sport*, 22(4), 510-529.
- Medvedyev, A. S. (1989). A system of multi-year training in weightlifting. (A. Charniga, Trans.) *Livonia, MI: Sportivny Press. (Original work published in 1986, Moscow, Russia: Fizkultura i Sport)*.
- Metsä-Tokila, T. (2002). Combining competitive sports and education: how top-level sport became part of the school system in the Soviet Union, Sweden and Finland. *European Physical Education Review*, 8(3), 196-206.
- Pope, R. P., Herbert, R., Kirwan, J. D., & Graham, B. J. (1999). Predicting attrition in basic military training. *Military Medicine*, 164(10), 710.
- Rippetoe, M., Baker, A., & Bradford, S. E. (2013). *Practical Programming for Strength Training*. Aasgaard Company. Third edition.
- Rudzki, S. J. (2000). The number, rate and site of reported injuries in the Australian Army, 1987–1991. *ADF Health, Vol 1*.

Riordan, J. (1980). *Sport in Soviet society: development of sport and physical education in Russia and the USSR* (Vol. 22). CUP Archive.

Riordan, J. (2002). *The international politics of sport in the twentieth century*. Taylor & Francis.

Takano, R. (2012). *Weightlifting Programming: A Winning Coach's Guide*. Catalyst Athletics.