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I Symposium of Elite Performance in Combat Sports

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REPORT

Abstract

This report presents a summary of the I Symposium of Elite Performance in Combat Sports held in Madrid, May 27, 2017. The symposium, organized by the Faculty of Sport Sciences-INEF of the Polytechnic University of Madrid, aimed to bring science closer to practice. A panel of highly successful athletes involved in karate, fencing, and taekwondo shared their experiences. The speakers presented crucial topics for an optimal preparation and high level performance such as strength training, sport psychology, brain maturation, sports nutrition, competition planning, sport injuries, and perceptual-decision making training.

Keywords: elite athletes; preparation; optimal performance; Olympic sports; martial arts; combat sports.

I Simposio de Alto Rendimiento en Deportes de Combate

Resumen

Este informe resume el I Simposio de Alto Rendimiento en Deportes de Combate, celebrado en Madrid el 27 de mayo de 2017. El simposio, organizado por la Facultad de Ciencias del Deporte-INEF de la Universidad Politécnica de Madrid, tuvo como objetivo acercar el conocimiento científico a la práctica. Se desarrolló una mesa de discusión compuesta por campeones de karate, esgrima y taekwondo, en que los participantes compartieron sus experiencias. Los ponentes presentaron diversos temas cruciales para lograr una preparación óptima y un desempeño de alto nivel en deportes de combate, tales como entrenamiento de fuerza, psicología deportiva, maduración del cerebro, nutrición deportiva, planificación de la competición, lesiones deportivas y entrenamiento perceptivo y para la toma de decisiones.

Palabras clave: atletas de elite; preparación; rendimiento óptimo; deportes olímpicos; artes marciales; deportes de combate.

I Simpósio de Alto Rendimento em Desportos de Combate

Resumo

Este texto resume o I Simpósio de Alto Rendimento em Desportos de Combate, que teve lugar em 27 de maio, em Madrid. Organizado pela Faculdade de Ciências do Desporto (INEF), da Universidade Politécnica de Madrid, o Simpósio teve como objetivo associar o conhecimento científico e a prática. Organizou-se um painel de discussão constituído por campeões de karaté, esgrima e taekwondo, em que os participantes partilharam as suas experiências. Os proponentes apresentaram diversos temas cruciais para conseguir uma boa preparação física e um desempenho de alto nível em desportos de combate, tais como o treino da força, psicologia desportiva, maturação cerebral, nutrição desportiva, planificação da competição, lesões desportivas e treino perceptivo e tomada de decisões.

Palavras-chave: atletas de elite; preparação; ótimo rendimento; desportos olímpicos; artes marciais; desportos de combate.

1. Introduction

The I Symposium of Elite Performance in Combat Sports was organized by the Faculty of Sport Sciences-INEF of the Polytechnic University of Madrid in May 27, 2017. The symposium aimed to provide scientific and practical information that could be used for the analysis and further development of combat sports (e.g., fencing, karate, taekwondo, judo, wrestling, boxing, kung-fu and other martial arts). The event was well attended and received gathering about 70 participants including coaches and other professionals involved in combat sports. Below I indicate the most relevant points from each session.

2. Experiences shared by a panel of highly successful combat sport athletes

The symposium started off with a panel that included José Luis Abajo "Pirri" (Bronze medal in the 2008 Olympic Games in fencing), Nicolás García (Silver medalist in the 2012 Olympic Games

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in taekwondo), José Manuel Egea (7 times World champion in karate), Iván Leal (4 times World champion in karate) and Cristina Feo (World champion in karate) (Picture 1). The panel, moderated by Óscar Martínez de Quel (World champion in karate), shared their experiences involving early career and specialization as well as issues related to their success. The age at which the panelists started in their sports varied from 4 to 12 years, with many late-comers having practiced a wide variety of other sports. A common theme that emerged from the accounts of the panelists was mental preparation. Making the right decisions whether in practice or under the pressure of competition, dealing with emotions or learning to cope with the challenges associated with being successful were emphasized. Success is usually associated with large media attention especially during Olympic Games, which is typically uncommon in the context of combat sports. The importance of decision making was also highlighted, with karate athletes in particular, giving examples of how it compensates for a possible lack of physical readiness. One of the panelists also pointed out the importance of learning to deal with the media and re-establishing effective training routines. Weight management was also discussed, with some of the panelists sharing the assumption of a potential advantage competing at a lighter weight, and their struggle trying to lose weight quickly. These weight-cutting behaviours not only have an impact on the individuals who often feel isolated, but also on the rest of the team, as the coaching staff may need to do some rearrangements on the team composition. Other panelists, however, did not report weight cutting behaviours. In closing up, the panelists emphasized again the role of the mental variables such as determination, motivation to strive, and high goal approach tendencies, which they reported as having occasionally compensated for a lack of ideal physical training. As for their transition out of sport, the panelists reflected on the benefits of the skills they acquired in their sport for their later occupations with one of them being currently involved in a coaching position.



Picture 1. Participants in the panel of highly successful combat sport athletes. From left to right: Óscar Martínez de Quel (karate), José Manuel Egea (karate), Iván Leal (karate), Cristina Feo (karate), José Luis Abajo “Pirri” (fencing) and Nicolás García (taekwondo).

3. Strength training

The first presentation dealing with strength training was given by Eneko Baz from Power Explosive Team. Eneko presented results of a review of the strength training literature. Combat sport modalities are usually distinguished in the literature based on their requirements as gripping (e.g., judo, wrestling), or hitting (e.g., boxing, karate, taekwondo) modalities. Different physiological profiles and needs for each modality were identified. The presentation included guidelines for the development of effective strength training programs taking into account such profiles.

The second presentation related to strength training was given by David Marchante also from Power Explosive Team. Entitled “Velocity based strength training for combat sports” the presentation highlighted the need to develop explosive strength. Following on the previous presentation, evidence-based guidelines for an effective training program using adequate load-power-velocity balance to increase explosive muscular strength were proposed. The need for an individualized assessment and monitoring was emphasized, and a practical tool, which is available

as a phone application (Balsalobre-Fernández, Marchante, Muñoz-López, & Jiménez, 2017) was presented.

4. Sport Psychology

Pablo del Rio, sport psychologist of the Consejo Superior de Deportes presented “Psychological training to ‘fight’ for the Olympic medals”. His talk focused on the integration of some of the principles of mental training into practice and competitions. Specifically, keeping a training diary to increase the athletes’ awareness of their own strengths and improvement areas, fostering task-involvement, practice sessions that include goals, imagery training, helpful thoughts and self-talk during competitions were among the most relevant aspects highlighted. Pointing out the importance of an objective analysis of the opponent, Pablo used the analogy of a chess game, where the decision making processes and tactical execution plans are based on such analysis and the athlete’s own strengths. Demystifying mental skills’ training, Pablo, who has travelled with teams to seven Olympic Games, provided examples of specific work with athletes and coaches in practice and short onsite competition interventions to resolve specific situations. The importance of working with coaches as well as with the athletes on a daily basis was emphasized.

The next talk entitled “Brain maturation and learning process: Foundations for high athletic performance” was given by Angel Gutiérrez from the University of Granada. The presentation introduced the concepts of ontogenesis and phylogenesis of the brain. Critical periods during which the brain is particularly sensitive to environmental stimuli and can therefore mature were presented. The presentation emphasized the importance of providing appropriate environmental stimuli, as failing to do so may harm or make nearly impossible to develop the needed functions later in life. Guidelines for healthy living habits during pregnancy and early life stages were provided. These habits are crucial for motor skill and acquisition and coordination which are key foundations of sport performance. Phylogenetic development of the brain was provided for a better understanding of the development of the nervous system.

5. Sports nutrition

The first talk entitled “Weight loss and dehydration in weight-based sports” was given by Alberto Martínez-Abellán from the University of Murcia. Existing scientific evidence indicates that quick weight losses, which are so prevalent in combat sports, have detrimental consequences (Martínez Abellán, 2015). The presentation provided results about the levels of dehydration which is characteristic of some individuals incurring in weight cutting strategies prior to competition. Such levels can be harmful for performance and for the health of the individuals in the long run. Different organizations have proposed actions (e.g., use of a biometric passport) in an attempt to prevent or avoid such behaviors, which some consider a form of doping.

Cristina Casals also from the University of Murcia presented “Sports nutrition: Making the weight and optimal performance”. This presentation took an educational approach. Current issues in sports nutrition research including the use of dietary supplements were presented (Casals Vázquez, Vázquez Sánchez, Casals Sánchez, & Suárez-Cadenas, 2015). Some of the recommendations provided for a healthy and functional weight management included long-term weight loss planning controlling for dehydration, a balance nutrient intake, and a scheduled meal plan.

6. Planning

Marco Carreira, the Taekwondo coach of the National Team at the High Performance Centre in Madrid presented “Preparation for an Olympic cycle in Taekwondo”. He provided the qualifying paths and results of the most successful athletes he has worked with during the two last Olympic Games, where the team won one gold and two silver medals at the London 2012 Olympics, and one silver and one bronze medal at the Rio 2016 Olympic Games. He discussed the preparation and qualification for major competitions, as well as the ups and downs and other related issues affecting the individual athletes, the coaching team, and the strategic plans of the Federation.



7. Sport injuries

César Castaño, currently working as physiotherapist in the Sporting de Gijón football team, presented “Sport injuries in combat sports”. As a former World and European champion in karate who has suffered sport-related injuries himself, César presented a review of sport injury related studies. Most common injuries characteristic of each modality were presented. These findings emphasized the need to implement specific injury prevention protocols, which are quite common in other sport modalities.

8. Perceptual-cognitive training

The final presentation entitled “Perceptual and decision making training in combat sports” was given by Óscar Martínez de Quel from the Complutense University of Madrid. Research evidence was presented about reaction time, anticipation, visual behavior, selection of information and decision making (e.g., Martínez de Quel & Bennett, 2016). Studies on gaze behavior indicated that expert performers compared to novice ones usually focus longer on the head or central parts of the body. A perceptual process underlying decision making mechanisms is situational probability information which has been found to differentiate between expert and novice performers. Thus, practice situations aiming at providing opportunities to use probability information may improve decision time and the likelihood of making better decisions. Guidelines with practical examples and pitfalls of perceptual and decision making training were provided.

9. Conclusion

All in all, this one-day I Symposium of Elite Performance in Combat Sports was a successful event, covering most relevant topics related to the preparation for high-level performance. The symposium was well taken by the audience who posed several interesting questions. Some of the discussions were cut short due to time constraints, what makes it apparent that there is a need for a second Symposium, which could perhaps allow for a more in-depth discussions of periodization of bio-motor and mental skills training.

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