



# Physical and the Mental Health of Athletes Demand Special Emphasis on Nutritional Intake and Professional Techniques

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### Editor's Note

Nutrition plays central role in building the body and mind of the individual in general and the athletes that exert tremendous amount of energy to accomplish their activities need significant energy levels that can be bridged with the help of macro and micro nutrients. Awareness on the amount of calorie consumption and the type food the child, adolescent and the fully grown athlete need goes a long way in achieving their goals as players or athletes. Right proportion of carbohydrates, vitamins, minerals, fats and fluids are important for optimum growth and the development of the athletes [1].

Athletes are not over night; they need short and long term training as each game or athletics demand specific technique. The physical requirements may also vary from one sport to the other. Since the peak performances in a sports person's career are accomplished at the early stage, training to attain the necessary physical and cognitive strength as well as the sport related techniques must be imported to them thoroughly [2] in order to reach the individual, and national goals.

The journal of Athletic Enhancement is a peer reviewed scholarly, Hybrid journal that encourages authors to opt open access or subscription mode of publication to submit their manuscript. The journal provide extensive coverage to a wide range of topics related to physical, psychological, philosophical aspects of the sports and athletics and encourage authors across the globe to file original manuscripts as research articles, reviews and case studies. Volume No 8, Issue 2 of the Journal of Athletics Enhancement discussed issues, challenges, perspectives, techniques and insights for the athletes to get benefit out of the tried and tested information.

Be it Soccer or volleyball the ultimate aim of the players or the team is winning the game by making strategic moves to overcome the opponent. Agility (movement) is an important element in both the games mentioned above. While soccer relays on the movement of lower body parts, volleyball depends on the mobility of the upper portion of the body. In both the cases, apart from the physical fitness, strategies to outperform the opponent are based on psychological movements of the players. By looking at the agility of the opponents (facial, and body movements), experienced players can predict the immediate response of the opponents upon which they built their

own reactions. This ability to predict, anticipate and develop the actions and reactions to reach their final goal. The time that elapses between perceiving an action and to be able to give a counter action is short in simple tasks compared to the complex tasks. The players have to tackle situations like intercepting a pass or dribble. The actions and the consecutive reactions are based on perceiving the stimulus of the opponents and selecting a response to tackle it by making an appropriate move. These are cognitive functions; involving processing the information they receive from the sense organs, decision making and executing the same through their reactions. Onishi et al. [3] in their experimental study have compared soccer players with that of volleyball players and concluded that sport-specific experience affects reaction times in the premotor phase.

Nutrition is central to the physical and the mental abilities of the athletes and the swimmers participating in 400 m have to exert intensive aerobic, anaerobic, lactic, and alactic efforts and need glycolytic energy to withstand the high blood lactate concentrations for approximately 4 minutes. This is the estimated time at which maximum hydrogen ions ( $H^+$ ) accumulation and low intramuscular pH are reported. Nutritional supplements containing bicarbonate, phosphates, caffeine, proteins and amino acids are prescribed for athletes that present high  $H^+$  concentration, inducing muscle acidosis and fatigue. Norberto et al. [4] have conducted a 6-week, double-blind placebo-controlled study among 13 swimmers by ingesting  $4.8 \text{ g}\cdot\text{day}^{-1}$  of  $\beta$ -alanine or placebo and concluded that Beta-alanine ( $\beta$ -alanine) supplementation can be used to increase intramuscular carnosine content ( $\beta$ -alanyl-L-histidine) in cytoplasmic dipeptide found in human skeletal muscle.

Wrestling is a sport of multidimensional demands which include the need to express explosive power, strength, neuromuscular coordination and static and dynamic balance, fitness programs aimed at improving balance performance in youth wrestlers should incorporate elements of vertical and horizontal jumps. This is based on the relationship between power expression capability of the lower limb and balance control in this type of athlete. Additionally, special attention should be paid to lateral plyometric training since this quality is related to dynamic balance, Fadhoun et al. [5] have analyzed the descriptive data of fourteen high level elite male wrestlers who participated in an Olympic competition and observed that enhanced balance capabilities should prove beneficial to elite wrestlers as they must coordinate technical explosive action while being jostled by opponents.

There are varieties of running forms, which are classified based on several biomechanical parameters. Running forms are generally assessed using a global method Volodalen<sup>®</sup>. This scale, based on five items, attributes a global subjective score ( $V^{\text{®}}$ score) to the running form of individuals and allows their classification along an aerial-terrestrial continuum. Patoz et al. [6] have tried to evaluate and validate Volodalen<sup>®</sup> scale for its intra- and inter-rater reliability. Thirty-six runners ran two 10-min running trials and runners were classified according to their  $V^{\text{®}}$ score. Relative and absolute reliability and systematic bias were determined by intra-class correlation coefficient (ICC), coefficient of variation (CV), and statistically significant difference, respectively. Regarding the global

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V<sup>®</sup>score, high intra-rater reliability for the expert and high inter-rater reliability for both novice and expert raters were involved. However, several subcomponents of the V<sup>®</sup>score reported poor inter-rater reliability. Irrespective of the expertise of the runners, the study found Volodalen<sup>®</sup> scale as reliable tool to assess global running forms for the subjective assessment of a single parameter of the V<sup>®</sup>score is rater-dependent, are associated with significant muscular fatigue and damages. Thus, after a downhill race, a runner experiences a decrease in muscle strength, delayed-onset muscle soreness (DOMS) and an increase in plasma muscles proteins such as creatine kinase (CK). Additionally, DHR may negatively impact the energy cost of running (Cr). Balducci et al. [7] have examined the role of step frequency (SF) on energy cost of running after a downhill run of 7.5 km at about 80% of heart rate reserve.

The study measured the pre- and post-DHR, force, stiffness and Cr at 70% of velocity at  $2VO_{max}$  in twelve participants that are unaccustomed to mountain running. Post-DHR data were recorded at a freely chosen SF and at the pre-DHR SF. DHR induced reductions in the knee extensors force and leg stiffness, an increase in blood lactate concentration, a significant increase in creatine kinase activity and muscle soreness in the post-DHR freely chosen SF increased. The study concluded that DHR-induced fatigue resulted in the selection of a new preferred SF limiting the rise in energy cost. SF seems to be

unconsciously but efficiently adapted to the altered muscular force and stiffness after DHR.

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