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Athletes' performance increasing techniques through application of aesthetics procedures

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Abstract

Sport performance is the way in which sport participation is measured. It has different aspects, each of which has a number of subcategories. Apart from these, there are some additional elements that are important in the training process, such as nutrition, meal time and supplements, maintaining a healthy weight, hydration, rest and recovery, satisfying body image and well-being. Aesthetician/Cosmetologist can be among the professionals who can be important for the positive outcome of the training process. Massage, sauna, and cryotherapy are some methods which can be used by athletes for recovering as quickly as possible and to be able for best performance for long periods of time. Electrotherapy can be used for the improvement of strength, speed, physical condition and maximum endurance and can increase the ability of red blood cells to deform and absorb more oxygen improving strength in high performance exercise. Electrotherapy and microcurrent have positive effects on body composition by burning fat. Additionally, depilation in sports, is recommended for a variety of reasons including body appearance, improving hydrodynamics and aerodynamics by decrease resistance, the easier putting on sports clothes, cleaning of wounds, easier massage to relax and regenerate muscles and better heat dissipation through the skin.

KEYWORDS

athlete's performance, aesthetic applications, sauna, massage, depilation, electrotherapy

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1. INTRODUCTION

Sport performance is the way in which sport participation is measured. It is a complex mixture of biomechanical function, emotional factors, and training techniques. There is a believe that athletes interested in performance tend to the competitive or elite level; athletes interested in simple participation, for broader purposes such as fitness or

weight control, are most often recreational athletes who do not set specific performance goals.

According to Grosser and Starischa [1], sport performance is the result of carrying out a sporting act or series of sporting acts. It is largely the result of many individual, performance determining, abilities and skills that are formed during a long-term training process.

Sport performance has different aspects, each of which has a number of subcategories. Endogenous factors include: fitness, technique, tactics, body systems, mental factors and talent. External factors include: the logistical infrastructure, climatic conditions and social factors [2]. Apart from these factors that affect the performance of athletes there are some additional elements that are important in the training process. Some of them are: Nutrition, meal time and nutritional supplements, maintaining a healthy weight (excess fat negatively affects performance), hydration (electrolytes), rest (sleep) and recovery (muscles), Satisfying body image and well-being (psychological effect) [2].

In addition to sports professionals, who are responsible for the implementation of the improving factors in sports performance, other professional specialties such as dietician or physiotherapist, are important for the positive outcome of the training process must be considered. Among these professions can be included the one of Aesthetician/Cosmetologist.

2. DISCUSSION

During training periods and competition, professional athletes can be exposed to high physical and psychological stresses. They need to recover as quickly as possible and to be able for best performance for long periods of time. For athletes and coaches effective strategies to speed up post-exercise recovery are massage, sauna, cryotherapy, compression and active recovery [3].

2.1. Massage

Massage is a “mechanical manipulation of body tissues with rhythmical pressure and stroking for the purpose of promoting health and well-being”. It is used for recovery purposes, prior and post exercise preparation, prevention and rehabilitation of injuries [4]. The most commonly used kind of massage is Swedish massage. Techniques and movements such as effleurage (slide), petrissage (tissue knead), friction (press), tapotement (rapid strikes) and vibration are applied for 10 to 30 min [3,5]. Other alternative methods include technically assisted vibration massage, acupressure underwa-

ter jet massage, and connective tissue massage. The effects of massage mechanisms are biomechanical, physiological, neurological and psychological [5]. Massage relieves muscle tension, reduce muscle pain and swelling, improve flexibility and range of motion; increase muscle blood flow and enhance clearance of substances such as blood lactate or creatine kinase [6].

2.2. Sauna and Cryotherapy

Sauna and cryotherapy are treatments which are used to support athletes to the training workload, to prevent the effects of hard exercise and to improve a recovery procedure from bodily damage and injury. Despite their opposite temperatures, both of these treatments come with a dose of similar health benefits and performance [7].

Toxins from food and environmental pollution affect athletic performance. Sweating in the sauna can reduce lead, copper, zinc and mercury in the body. Sweating removes bacteria from the skin and pores for better looking healthy skin. High temperature decreased muscle tension and heat causes dilate of blood vessels, increasing blood flow and allowing the rapid removal of metabolic waste (lactic acid that builds up in the muscles) [7,8]. The sympathetic nervous system becomes more active to maintain body temperature as it adjusts to the elevated temperature of the sauna. Body reacts by reducing the pain and strain threshold, from an intense workout. It is a method for stress reduction and well-being feeling [9].

Exposure to high temperature, despite activating the thermoregulatory reactions, can lead to the accumulation of body heat and increase in internal body temperature. Sauna treatments before exercise can help increase the efficiency of adaptive changes to physical effort in healthy people. The combination of sauna and regular physical activity is an option to enhance exercise-related health outcomes, if used with caution [7]. A negative use of sauna is for rapid weight lost before competition. It may cause dehydration, low body minerals, decreased muscle strength, cramps, weakness, nausea and diarrhea [10,11,12].

Cryotherapy reduces soreness and inflammation, improves anxiety and depression, stimulates the body's natural healing ability and immune function and helps surgical recovery. It is used in sports to relieve and treat intense and pain associated with an athletic injury and overuse of muscles. The positive effects of whole body cryostimulation (WBC) have been proven in sports [13,14]. There are two phases of WBC. First, heat loss is inhibited by stimulating the sympathetic nervous

system. Blood vessels are narrowing in the dermis and subcutaneous tissue, which increase body insulating properties and blood pressure. Following, the metabolic rate is activated by mechanisms which increase heat production [7,13,15]. Tissue hyperemia leads to the increase of oxygen concentration in the muscles. Both procedures have clinical, hormonal and biochemical effects that persist after the procedure [13,16].

2.3. Electrotherapy

In aesthetics, electrotherapy is used in a variety of applications and treatments. The different forms of electrotherapy have a significant effect on obesity, localized body fat, cellulite, skin flaccidity, muscle strengthening, lymphatic and blood circulation and body hair removal.

A form of electrotherapy is electrostimulation (EMS) which has been used in physiotherapy as a method for muscle rehabilitation after injury. It is also a way for muscle strengthening. During EMS, impulses are transmitted through electrodes on the skin close to tissue for stimulation. These cause involuntary contractions of the muscles and thereby recruit fast-twitch fibers. Due to EMS the nerves and muscle are activated, resulting positive effects on muscle strength [17].

EMS has been used in elite athletes and has positive results. There is an improvement of strength, speed, physical condition and maximum endurance. It is a treatment that increase the ability of red blood cells to deform and absorb more oxygen improving strength in high performance exercise [18,19]. There is a positive effect especially on the leg and hamstring muscles and improve body composition by burning fat [20].

High intensity focused electromagnetic Treatment (HIFEM) is a technology for muscle strengthening, toning and firming and is currently one of the most widely utilized procedures in body shaping [21]. HIFEM is based on a rapidly changing magnetic field generated with a wire coil that induces a secondary electric current in the tissue. The current triggers action potential in motor neurons which consequently lead to muscle contractions in the area of application. HIFEM improve the body's appearance and self-image. Intense muscle contractions induced by application of HIFEM technology increase anterior abdominal muscle mass reduced subcutaneous fat thickness, and reduced the distance between the rectus abdominis muscles. The result is the reduction in abdominal waist circumference and an improvement in the overall appearance of the abdomen [22,23].

With HIFEM, approximately 20,000 muscle contractions are performed in a 30 minute treatment.

In the lipolysis process the contractions that take place require energy, which is saved by the catabolism of triglycerides into free fatty acids. Fat cells are broken down and naturally eliminated from the body over a few weeks. This procedure leads to metabolic increase in the subcutaneous tissue [22,24,25].

2.4. Microcurrents

Microcurrents is a non-invasive and safe electrotherapy applied through a series of sub-sensory electrical currents (<1 mA). These are of a similar magnitude to the currents generated endogenously by the human body. The literature is focused on the effects of microcurrent to alleviate pain and promote tissue healing [26,27].

A combination of microcurrent with exercise may improve exercise performance, recovery, and morphological or structural changes in skeletal muscles [28]. Mechanisms which involve in enhancing the effects of exercise when combined with microcurrent are: (i) increased adenosine triphosphate re-synthesis, (ii) maintenance of intercellular calcium homeostasis that in turn optimizes exercise induced structural and morphological adaptations, (iii) the elicit of a hormone-like effect, which increases catecholamine secretion that enhances exercise-induced lipolysis and (iv) an enhancing muscle protein synthesis [29, 30].

In athletes, there is evidence concerning its effects in promoting body fat reduction, skeletal muscle remodeling and growth as well as attenuating delayed-onset muscle soreness (DOMS). The application of a microcurrent with an intensity varying between 50–400 μ A and frequency of ~1kHz, for 3h after workouts or on non-training day mornings, produces no additive benefits on endurance performance. However, microcurrent promotes body composition changes for endurance athletes by maintaining body mass and decreasing lower limb fat, along with a trend toward decreasing whole body fat. Furthermore, use of microcurrent during the post-workout time reduced DOMS over 72-h after performing a lower body exhaustive exercise [29].

2.5. Depilation

In now times, removing body hair for women not only is normality but required in order to be viewed positively by both genders [31]. A hairy body for men was considered not only to be the norm but a sign of masculinity. The past years, there are increasing images of hairless men's bodies in the media and social messages promoting that men should improve their appearance by reducing their body hair [32].

Shaving has been the most frequent method for body depilation specially in athletes [33,34]. A variety of injuries have been reported as a result of body depilation including razor burn, cuts to the skin, and in-grown hairs, folliculitis and treatment-resistant *Staphylococcus* infections in college and professional athletes. Body depilation also enhances the risk of contracting or transmitting the herpes simplex or human papilloma viruses in both sexes. Additionally, depilation is important in maintaining positive feelings and decrease anxiety about body image and appearance [35].

Unlike women, men use methods of depilation, that result in a reduction in the appearance of body hair rather than its complete removal [34, 35]. Permanent hair removal with a medical-grade laser has gained immense popularity in the sports world [36]. With laser hair removal, athletes who previously had to shave their body hair can now achieve longer-lasting results [37].

In sports, hair removal is recommended in many sports for a variety of reasons. In sports with body appearance like bodybuilding, the muscles look better on a depilated body [35]. In swimmers, runners and cyclists, the motivator is also purely practical, like improving hydrodynamics and aerodynamics by decrease resistance, the easier putting on sports clothes and cleaning of wounds. Athletes often use massages to relax and regenerate muscles, which can be dis-comfortable with hair presence. Additionally, there is a better heat dissipation through the smooth skin, so that the body does not overheat [32,38].

According to Sharp et al. [38] removing body hair reduces active drag among swimmers, thereby decreasing the physiological cost of swimming. They can swim faster and better. Runners and other athletes benefit from being hairless – as they gain more speed. Runners with their body hair removed can save up to 0.01 seconds per 100 meters or even 5.7 total seconds during a marathon. In addition, tennis players and cyclists often claim that having hairless skin feels cooler when exercising.

3. CONCLUSION

Aesthetician/Cosmetologist can be among the professionals who can be important for the positive outcome of the athletes training process. Massage, sauna, and cryotherapy are some methods which can be used by athletes for recovering as quickly as possible and to be able for best performance for long periods of time. Electrotherapy can be used for the improvement of strength, speed, physical condition and maximum endurance and

can increase the ability of red blood cells to deform and absorb more oxygen improving strength in high performance exercise. Electrotherapy and microcurrent have positive effects on body composition by burning fat. Depilation in sports, is recommended for a variety of reasons including body appearance, improving hydrodynamics and aerodynamics by decrease resistance, the easier putting on sports clothes, cleaning of wounds, easier massage to relax and regenerate muscles and better heat dissipation through the skin.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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