Citation: **Eman Saad (2023), The Effect of Using Electro Muscular Stimulation (EMS) Suits As a Type of Smart Clothes, International Design Journal, Vol. 13 No. 3, (May 2023) pp 345-350**

The Effect of Using Electro Muscular Stimulation (EMS) Suits As a type of smart clothes

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Abstract:

The use of the Electrical Muscle Stimulation Suit in treatment and training has become widespread because it is characterized by saving time, as the exerciser needs only 20 minutes a week to exercise the muscles of his entire body in one exercise session. The EMS is an exercise suit worn by the trainer and connected via Bluetooth without wires to a device controlled by the personal trainer, as the suit emits electrical impulses directed to the muscle fibers of the trainee and targets 90% of the muscles of his body at the same time, and the trainer can increase the intensity of the pulses Or reduce it and determine the amount of electrical stimulation for the muscles that he wants to target more, depending on the nature of the trainee's body. In this research, a study was conducted to measure the effectiveness of the electrical stimulation suit as one of the smart and functional types of clothing and to study its effect on the body after using it 12 sessions twice a week for 20 minutes in the training center. The results showed the effectiveness of this suit in reducing weight, reducing fat percentage, adjusting body measurements, and improving muscle activity by a large percentage. There is no doubt that practicing sports activity is necessary for all age groups, women, and men, and even children. Sports give them a sense of happiness and optimism. It also helps with physical, mental, and psychological comfort. It gives the body vitality, stimulates blood circulation, gives it the necessary flexibility, enjoys health, and protects it from diseases resulting from lack of movement and weight gain. However, some people find it difficult to maintain a healthy lifestyle and do not have enough time for daily exercise due to lack of time or working conditions and the large number of daily obligations. They resort to surgical operations or follow a strict diet to obtain an ideal healthy body, which may be harmful and cause diseases and serious health problems. The idea is based on electrical stimulation of the muscles of the body in a way that accelerates and strengthens the effect of exercise, that is, the effect of electrical stimulation for a 20-minute exercise is the same as the effect of a 3-hour exercise if the person does not wear the jacket. International studies and statistics regarding the use of electrical stimulation suits for muscles indicate that the number of gyms that offer electrical stimulation clothing for the muscles of the entire body is rapidly increasing in all countries of the world and in continuous growth. This growth helps push the global market for the production of electrical stimulation clothing, which recorded a growth of 51% percent, from $122 million in 2020 to $184 million by 2023.

Experimental Work: The applied study was conducted by comparing the results of external body measurements and the percentage of the internal components of the trainee before and after training using the electrical muscle stimulation suit. Determining the measurements and specifications of the trainee for the research sample: An (In Body) test was conducted to determine the measurement of body components, and the external measurements of the trainee's body were taken using a measuring tape. The following table shows the internal and external measurements of the trainee's body before training using the electrical stimulation suit. The training took place at the B-Fit Center in Sheikh Zayed City, where the measurement tools and equipment necessary for training are available. The duration of the program is 6 weeks, twice a week for 20 minutes a day, wearing an electrical stimulation suit for the muscles, starting with warm-up exercises for 5 minutes, then exercising for 20 minutes, then 10 minutes at the end of resting the muscles and the body.

Conclusion: The muscle electrical stimulation suit has achieved excellent functional performance in burning calories better, losing weight and harmonizing body measurements in a short time. The electrical stimulation suit has proven effective in activating weak muscles and improving the trainee's physical fitness and stamina. The EMS suit helped in healing sore muscles, as it works to increase blood flow in the body, which enhances the healing process by sending the necessary nutrients to the muscle, so it can be used as a tool for recovery after exercise for athletes. The use of the electrical muscle stimulation suit saved a lot of time to reach a body with better sizes and higher physical fitness, as training with this suit is characterized by the short period required to achieve the best results.

Recommendation: 1- Using clothes equipped with electrical muscle stimulation technology to improve the physical fitness of athletes. 2- Increasing cooperation between the specialized research authorities and factories to develop scientific research and exchange information on the use of electrical stimulation technology in the production of smart sportswear. 3- Efforts were made in many studies in the field of smart clothing because it represents the future of clothing in the world. 4- Adding courses related to electrical stimulation technology in clothing and clothing engineering in colleges of applied arts and corresponding colleges and paying attention to spreading modern technology on a wider scale. 5- Creating educational programs and websites introducing electrical stimulation technology and its applications in the field of clothing. 6- Preparing educational programs and workshops for students in different educational stages to study and research electrical stimulation applications in smart clothes.

Keywords:

Effectiveness - Electrical Muscle Stimulation Suit - Smart Clothing – Fitness

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Paper History:

Paper received 15th February 2023, Accepted 22th March 2023, Published 1st of May 2023

