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Effect of sand training for increasing endurance level among athletes

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Abstract
The aim of this study was to contemplate the impact of sand running for developing endurance among athletes. Twenty Male athletes between the cohort of 18 to 23 years (10 Experimental groups and 10 controls Group) were taken for the study. The Six Weeks endurance training program for experimental cluster got which incorporates a lot of sand running on alternate days and controlled cluster was given general coaching of athletics. The Pre check and Post check were conducted through Cooper check for each team to gauge the impact of sand running. This study shows that the sand running has increase the endurance among the Experimental group in conjunction with Physiological capability of the athletes. It's counselled that sand running is sweet for the endurance development of athletes.

Keywords: Sand Running, Endurance, Cooper Test.

Introduction
Endurance (also associated with sufferance, resilience, constitution, fortitude, and hardiness) is that the ability of an organism to exert itself and stay active for a protracted amount of your time, additionally as its ability to resist, withstand, endure, and have immunity to trauma, wounds, or fatigue. It's typically utilized in aerobic or anaerobic exercise. The definition of 'long' varies consistent with the sort of exertion – minutes for prime intensity anaerobic exercise, hours or days for low intensity aerobics. Coaching for endurance will have a negative impact on the flexibility to exert strength unless a private additionally undertakes resistance coaching to counteract this impact.

When someone is ready to accomplish or stand up to a better quantity of effort than their original capabilities their endurance is increasing that to several personnel indicates progress. In wanting to enhance ones endurance they'll slowly increase the quantity of repetitions or time spent, if higher repetitions are taken quickly muscle strength improves whereas less endurance is gained. Increasing endurance has been tried to unleash endorphins leading to a positive mind. The act of gaining endurance through physical activity has been shown to decrease anxiety, depression, and stress, or any chronic sickness in total. Though a bigger endurance will assist the circulatory system it doesn't imply that any upset is bound to improve. "The major metabolic consequences of the diversifications of muscle to endurance exercise are a slower utilization of muscle animal starch and glucose, a bigger reliance on fat chemical reaction, and fewer feed production throughout exercise of a given intensity."

Endurance coaching is crucial for a spread of endurance sports. A notable example is distance in racket sports, football, rugby, martial arts, basketball and cricket. Endurance exercise tends to be popular non-athletes for the aim of accelerating general fitness or burning additional calories to extend weight loss potential.

Long-term endurance coaching induces several physiological variations each centrally and still demand some endurance. For example aerobic endurance is important (to variable extents) in racket sports, football, rugby, martial arts, basketball and cricket. Endurance exercise tends to be popular non-athletes for the aim of accelerating general fitness or burning additional calories to extend weight loss potential. Long-term endurance coaching induces several physiological variations each centrally and peripherally mediates. Central vessel variations embody ablated vital sign, accumulated stroke volume of the center, accumulated plasma, with none major changes in red somatic cell count, that reduces blood viscousness and accumulated

flow yet as total mitochondrial volume within the muscle fibers utilized in the coaching (i.e. the thigh muscles in runners can have additional mitochondria than the thigh muscles of swimmers). Mitochondria increase in each variety and size and there are similar will increase in hemoprotein and aerophilic enzymes. Variations of the peripheral embody capillarization, that's a rise within the expanse that each the blood vessel and blood vessel capillaries provide. This conjointly permits for accumulated chilling throughout strenuous exercise. The muscles heighten their animal starch and fat storing capabilities in endurance athletes so as to extend the length in time during which they will perform work. Endurance coaching primarily works the slow twitch (type 1) fibers and develop such fibers in their potency and resistance to fatigue. Biological process conjointly improves increasing the athlete's capability to use fat and animal starch stores as an energy supply. These metabolic processes are referred to as glycogenolysis, metastasis and lipolysis. There's higher potency in chemical element transport and distribution. In recent years it's been recognized that aerophilic enzymes like succinate dehydrogenase (SDH) that modify mitochondria to interrupt down nutrients to create ATP increase by a pair of. 5 times in well trained endurance athletes additionally to SDH, hemoprotein will increase by 75-80% in well trained endurance athletes.

The potential for negative health effects from semi-permanent, high-volume endurance coaching have begun to emerge within the scientific literature in recent years. The well-known risks are primarily related to coaching for and participation in extreme endurance events, and have an effect on the circulatory system through adverse structural remoulding of the center and therefore the associated arteries, with heart-rhythm abnormalities maybe being the foremost common ensuing symptom.

The heart rate monitor is one in all the comparatively simple ways to assess fitness in endurance athletes. By examination rate over time fitness gains are often discovered once the center rate decreases for running or sport at a given speed. In sport the result of wind on the cyclists speed is tough to figure out then several cyclists currently use power meters engineered into their bicycles. The ability meter permits the contestant to truly live power output over a collection length or course and permits direct comparison of fitness progression. Within the 2008 athletic contest Michael Phelps was aided by recurrent suck threshold activity. This allowed his coaches to fine tune his educational program so he may recover between swim events that were generally many minutes apart. A lot of just like glucose for polygenic disorder, lower priced suck activity devices are currently out there however normally the suck activity approach continues to be the domain of the skilled coach and elite contestant.

The characteristics of a sand coaching surface and a grass coaching surface are quite completely different. For the contestant there are distinct physiological additionally as biomechanical variations once working on one or the opposite. This study was performed to see the consequences of every surface on soccer players.

The participants of the study were 10 elite athletes - eight male and 2 female. The athletes were needed to finish 5 separate testing sessions, including 3 performance trials and 2 coaching sessions (one on sand, one on grass). The coaching session used was designed to mimic the movement patterns that are commonest to team sports, together with acceleration, agility, and customary game simulation drills. The sand coaching session was conducted on soft, dry beach sand on level space of beach off from the water's edge. The grass session was conducted on a well-maintained sporting ground of Kikuyu grass. Athletes were barefoot throughout the sand trial, compared to the grass trial wherever they wore shoes. An equivalent coaching session was completed on each sand and grass surfaces, and 24 hours later, every session was proceeded by a performance trial consisting of vertical jump, continual sprint ability check, and a 3 kilometer period trial. These measures were then compared to baseline measures acquired before the study.

Both physiological and sensory activity variables like blood wet-nurse, heart rate, and ratings of perceived toil were measured throughout every session to boot throughout the twenty four hour post-exercise amount, measures like muscle injury, inflammation, and hematolysis (the breakdown of red blood cells) were measured. GPS units were wont to monitor sport-specific acquisition sessions, and distance and speed were calculated from the information collected on the units. Blood samples were taken pre-, post-, and 24 hours when exercise.

The results of the analysis showed a considerably higher vital sign and rating of perceived toil within the sand coaching sessions. There have been no variations in 24-hour post-exercise performance, no indications of muscle injury, and rates of inflammation and hematolysis were similar between every surface. These results recommend that acting a sport-specific acquisition session on sand as critical grass may end up in a very larger physiological response, while not inflicting any extra injury to next day performance.

Based on this analysis, athletes will use sand surfaces to boost performance without fear regarding recovery or performance problems. Sand coaching needs less stability and energy came throughout exercise, which ends during a larger employment for the muscles to realize constant output. The actual fact that it won't have an effect on recovery is promising, since it may be an efficient coaching technique.

Sand running offers the following benefits.

a) Helps develop power and muscle elasticity.
b) Improves stride frequency and length.
c) Promotes strength endurance.
d) Develop maximum speed and strength
e) Improves lactate tolerance

Method

The subjects for this study is 20 college level Male athletes of Kerala University between the age group of 18 to 23 years (10 Experimental Group and 10 Control Group) were taken for the study. Cooper's 12 Min Test is used for collection of Data.

Procedure of data Collection

The 12 Min Cooper take a look at were used for Pre test for Experimental group and Controlled group and results was recorded. The six weeks coaching got to Experimental group that consists of Sand Running Sessions on alternate days. The Sand Running Sessions includes Short Sand Sprints, Continuous Running in Sand and Sand Hills got coaching to experimental group. The controlled group was given the overall coaching. After Six weeks coaching the Post take a look at were conducted experimental group and controlled group. The athletes usually hail from totally different socio-economic standing, totally different dietary habits, mode of living etc. bound factors like daily routine, life vogue and food habits which might have an impact on the performance of each team couldn't be controlled.

Result and Discussion

12m Run/Walk test was used to assess cardio respiratory endurance before and after both of the experimental conditions. Items on this time are weighted such that a decrease in score is indicative of increase in fitness level in cardio respiratory endurance.

Table 1: Descriptive statistics of different groups measured in post-testing (Cooper Test 12m R/W)

Group	N	Mean	S.D
Control Group	10	3596.74	186.38
Experimental Group	10	3731.93	143.41
Total	20	3664.33	164.89

Table 1 shows the values of mean and standard deviation for the data on 12m R/W between the control and experimental groups during post-testing. The control group mean was 3596.74 (SD = 186.38) and the experimental group mean was 3731.93 (SD = 143.41).

Table 2: Pair wise comparisons on Cooper Test 12m R/W

(A) Group	(B) Group	Mean Diff. (A-B)	Std. Error	Sig*
Control Group	Experimental Group	-135.19	41.32	0.021
Experimental Group	Control Group	135.19	441.32	0.021

Table 2 shows the pair wise comparisons of 12m run/walk among both groups. The control group showed a MD = -135.19 and $p = 0.021$. The experimental group showed a MD = 135.19 and $p = 0.021$.

Conclusion

Sand Running ends up in the calf muscles learning to contract a lot of quickly and thereby generating work a better rate, they become a lot of powerful. The calf muscles achieve this by recruiting a lot of muscle fibres, around 2 or 3 times as several in comparison to running on the flat. Sand Running is usually recommended for endurance athletes a lot of in off season and fewer in season.

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