



RELATIVE TRAINING ON SELECTED PHYSIOLOGICAL VARIABLES AMONG WEIGHT LIFTING POWER LIFTING AND BODY PHYSIQUE

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ABSTRACT

As physiology basically centres around the elements of structures, we can't talk about physiology without knowing life structures. Likewise, we can't comprehend the life systems and physiology until and except if we know the arrangement of human body. (Gireesha, S. (2017). The first is a continuous motion in which the weight is lifted to shoulder level and then over the head in an extended arm position, while the second is a discrete process in which the weight is lifted to shoulder level and then over the head in an extended arm position. Over time, powerlifting grew in popularity and was further refined with the introduction of different federations, each with its own regulations on equipment usage, drug testing, and lifting techniques. Body physique refers to the structure, composition, and appearance of an individual's body. It plays a crucial role in determining overall health, fitness levels, and physical capabilities. To accomplish the purpose of the study sixty inter collegiate weight lifting power lifting and body physique (N=60) was selected from various college of TNPESU university, Chennai District. Their age ranged from 18 to 26 years. The subjects were randomly assigned to three equal groups. Group- I (n=20) underwent Weight lifters and Group - II (n=20) Power lifters and Group III (n=20) Body physique. The following tests were performed to measure the physiological test items: heart rate monitor test was used to measure the heart rate, breath holding test was used to measure the breath holding time. The data collected from the subjects were statistically analyzed using 't' test to find out whether significant mean difference existed at 0.05 level of confidence. The result of the study was significant difference in the heart rate and breath holding time between weight lifting power lifting and body physique. The physiological variables level is better to the power lifting compare with the weight lifting power lifting and body physique.

KEYWORDS: Heart Rate, Breath Holding Time, Weight Lifting, Power Lifting and Body Physique.

INTRODUCTION

Physiological fitness can be defined as fitness relating to the physical aspects of the human body. Other than psychological and emotional fitness assessments, physiological fitness assessments involve testing a client's cardio-vascular fitness, muscular strength, flexibility, gait, and others. Physiology is the branch of biology dealing with the functions and activities of living organisms and their parts, including all physical and chemical processes. Exercise Physiology is the study of how exercise changes the function and structure of the body. Physiology is the academic study of the various processes, systems, and functions of the human body as influenced by the performance of physical activity. Exercise is a term that has a variety of possible meanings, each dictated by circumstances. In a sports context, exercise is the performance, conditioning or training undertaken in respect to a particular athletic or sporting purpose. Exercise may also be directed to improvement of a person's general health, physical fitness, or as physical therapy, to augment an existing treatment to remedy or to ameliorate the effects of a disease or illness upon the body. A sound heart supplies the body with simply the appropriate measure of blood at the correct rate for whatever the body is doing at that

time for a normal person. For instance, being alarmed or shocked consequently discharges adrenaline, a hormone, to make the heart rate quicker. This readies the body to utilize more oxygen and vitality to escape or face potential peril. (Gireesha, S. (2017).

METHODOLOGY

To achieve the purpose of the study (n=20) underwent Weight lifters and Group - II (n=20) Power lifters and Group III (n=20) Body physique were selected from TNPESU Chennai district. The age of the subjects ranged between 18 and 26years. The following tests was performed to measure the physiological parameters:-To measure heart rate in bio monitor, to measure breath holding time in breath holding fitness test.

STATISTICAL TECHNIQUES

The data was collected & statically examined to compare the physiological variables of weight lifting power lifting and body physique. The "t" ratio was calculated to find out the significance difference if any in all the cases to test significance of 0.05 level of confidence was used.



Group	Mean	SD	MD	SEM	t-ratio
Weight Lifters	74.53	0.22	2.08	0.11	12.30*
Power Lifters	72.96	0.18			
Body Physique	73.61	0.14			

TABLE I

Computation of ‘t’ Ratio Between S Weight Lifting Power Lifting and Body Physique on Heart Rate

*Significant at 0.05 level of confidence (2.09) 1 and 19

Table 1 Shown the mean value of heart rate between weight lifting power lifting and body physique were 74.53, 72.96 and 73.61 respectively. The obtained “t” ratio value of 12.30 was

higher than the required table value of 2.09 for degrees of freedom, 1 and 19 significant at 0.05 level of confidence. The mean value of weight lifting power lifting and body physique on heart rate were graphically represented in figure I.

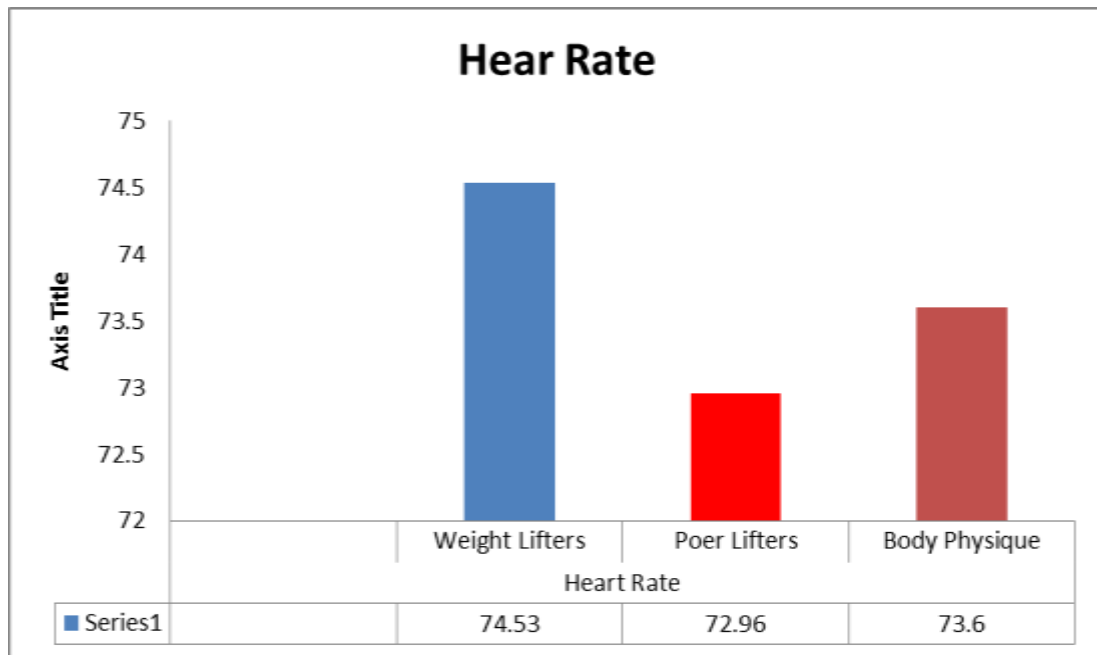


FIGURE- I

Bar Diagram on Heart Rate of Weight Lifters, Power Lifting and Body Physique

Group	Mean	SD	MD	SEM	t-ratio
Weight Lifters	31.50	0.47	2.08	0.11	20.34*
Power Lifters	33.60	0.36			
Body Physique	30.70	0.25			

TABLE II

Computation of ‘t’ Ratio Between S Weight Lifting Power Lifting and Body Physique on Breath Holding Time

*Significant at 0.05 level of confidence (2.09) 1 and 19

Table 1 Shown the mean value of breath holding time between weight lifting power lifting and body physique were 31.50, 33.60 and 30.70 respectively. The obtained “t” ratio value of 20.34 was higher than the required table value of 2.09 for degrees of freedom, 1 and 19 significant at 0.05 level of

confidence. The mean value of weight lifting power lifting and body physique on breath holding time were graphically represented in figure II.

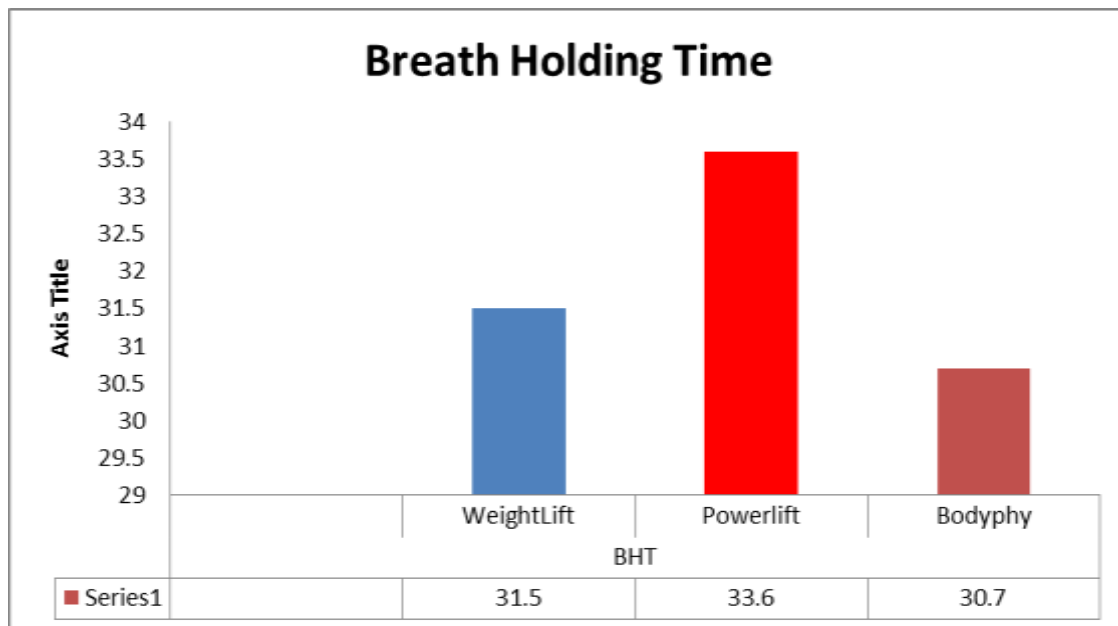


FIGURE- II

Bar Diagram on Breath Holding Time of Weight Lifters, Power Lifting and Body Physique

DISCUSSION AND FINDINGS

The results of the present study revealed that there was a significant difference in the physiological variables such as heart rate and breath-holding time among college men engaged in weightlifting, powerlifting, and body physique training. This indicates that the type of strength training or body conditioning adopted by an individual influences the functioning of the cardiovascular and respiratory systems. Weightlifters, who perform explosive lifts, tend to exhibit higher fluctuations in heart rate due to the demand for immediate power output. Power lifters, on the other hand, show a different adaptation as their training emphasizes maximum strength with fewer repetitions, which contributes to enhanced neuromuscular efficiency and controlled heart rate variations. Body physique trainers (bodybuilders), who focus on hypertrophy through moderate loads and higher repetitions, often display better breath-holding capacity and muscular endurance. The differences in breath-holding time highlight the variations in lung capacity, oxygen utilization, and tolerance to physical stress across these groups. These findings suggest that specific training modes bring about distinct physiological adaptations, and such insights can help coaches, trainers, and physical educators design sport-specific conditioning programs to maximize performance while ensuring health and safety.

Storey et al., (2012) As such, the isometric peak force and contractile rate of force development of weightlifters is 15–20% and 13–16% greater, respectively, than in other strength and power athletes. In addition, weightlifting training has been shown to reduce the typical sex-related difference in the expression of neuromuscular strength and power.

Morris et al., (2022) Overall, these findings support the notion that if the training goal is to improve strength, power and speed, supplementary weightlifting training may be

advantageous for athletic development. Whilst WLT and PLYO may result in similar improvements, WLT can elicit additional benefits above that of TRT, resulting in greater improvements in weightlifting and jumping performance.

CONCLUSIONS

The results of this special study from the Chennai district indicate that power lifters demonstrate a more favourable heart-rate profile (lower resting heart rate and/or faster post-exercise recovery) and longer breath-holding time than Olympic weightlifters and physique-oriented trainees. This pattern is plausible given the demands of maximal, low-rep lifting (typically ≥ 85 –100% 1RM) in powerlifting. Training at such intensities elicits strong central adaptations—greater stroke volume and enhanced vagal (parasympathetic) reactivation—so the heart can pump more blood per beat and return to baseline more efficiently, producing lower resting values and quicker recovery. In parallel, the breathing mechanics of heavy singles and doubles require deliberate bracing with brief, controlled apnoea (often using the Valsalva manoeuvre). Over time, this repeatedly strengthens the diaphragm and accessory respiratory muscles and increases tolerance to rising CO_2 , which can present as superior breath-holding time in standardized tests. By contrast, Olympic weightlifting emphasizes speed, bar path, and repeated explosive efforts within sessions. Although highly technical and neurologically demanding, the lifts are more ballistic and interspersed with frequent attempts; acute heart-rate spikes can be higher, and the reliance on short, maximal bracing is less prolonged than in powerlifting. Physique-oriented training typically uses moderate loads with higher repetitions and shorter rest intervals to maximize hypertrophy. This produces sustained cardiovascular strain within sessions (elevated working heart rate) but involves rhythmic breathing rather than repeated breath holds, so adaptations favor metabolic and



local muscular endurance more than apnoea tolerance. Together, these training-mode differences explain why powerlifters may outperform the other groups on resting/recovery heart rate metrics and breath-holding time. Practically, these findings suggest that coaches who want to improve heart-rate recovery and breath-control capacity in college men could incorporate phases of very heavy, low-rep compound lifting with coached bracing. However, interpretation should consider potential confounders: training age, caffeine or stimulant use, body composition, ambient heat and humidity (relevant in Chennai), measurement timing (resting vs post-exercise heart rate), and the specific breath-hold protocol used. Future work can control these variables and include heart-rate variability (HRV) and respiratory muscle strength tests to clarify mechanisms.

The conclusion of the study indicate power lifters shows better performance in physiological variables such as heart rate and breath holding time when compare with weight lifting and body physique in Chennai district.

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