



ISSN: 2456-0057

IJPNPE 2022; 7(1): 135-137

© 2022 IJPNPE

www.journalofsports.com

Received: 06-10-2021

Accepted: 13-11-2021

Dr. Parmod Kumar Sethi

Associate Professor, Department
of Physical Education and
Sports Sciences, PGDAV College
(E) University of Delhi, Delhi,
India

Relationship between quadriceps, gluteus and hip flexors muscle power and Olympic weightlifting skills performance

Dr. Parmod Kumar Sethi

Abstract

The Purpose of the study was to analyze the relationship between Quadriceps, Gluteus and hip flexors muscle power with Olympic Weightlifting skills Performance of 50 Male (Age 18-25) weightlifters. All the subjects voluntarily agreed to participate in the study. The subjects had participated in Inter College, state and Inter University Competitions from 2015-2018. The Weightlifting Skills Performance Snatch and Clean & Jerk records were taken from recognized Competitions. Measurement of Quadriceps, Gluteus and hip flexors muscles Power (legs) were measured through Standing Broad Jump tests. The R 4.1.0 statistic software program was used for data analysis, the Pearson Correlation Coefficient (r) was used to determine the relationship between Agility, Power and Olympic Weightlifting skills Performance and significance level was determined as $P < 0.05$. Result of the study indicates that weightlifting skills performance Snatch and Quadriceps, Gluteus and hip flexors muscle power ($r = 0.52$) and Clean & Jerk and Quadriceps and Gluteus muscle Power ($r = 0.47$) are significantly correlated.

Keywords: Olympic weightlifting, snatch, clean & jerk, power, standing broad jump

Introduction

Weightlifting is one of the most remarkable types of sports, which helps to develop the Physiological fitness of the body. Competitive weightlifting places demands on the whole body - musculoskeletal fitness, Psychology Perpetration and Systemic training plan. It is evident that before the training and competition, our preliminary work includes working of the whole body- musculoskeletal fitness.

Competitive Weightlifting involves two skills i.e. Snatch and Clean & Jerk. These skills need flexibility (ROM) of hip, legs and shoulders joints. It also involves Strength, Balance, Speed, Power, Agility, arm to leg co-ordination during the training and performance. Lower part of body is an important factor in weightlifting performance while lifting heavy weight over the head. While lifting the weight in snatch and clean & jerk, the lower part, as legs or muscles, faces strong stress.

The standing broad jump test (SBJ) is administered to evaluate the muscle power of the legs. This test is accepted worldwide to assess the muscle power of lower part (legs) of athlete's body in different sports and games.

Purpose of the Study

The purpose of the study was to analyze the relationship between Quadriceps, Gluteus and hip flexors muscles power and Olympic Weightlifting skills snatch and clean & jerk.

Methodology

To achieve the objective, the present study was conducted for Male weight lifters ($n=50$) age 18-25 years. Subjects were selected by using simple random sampling method from participants in University Inter College, State and all India Inter University Weightlifting Competitions from 2015-2018 in different body weight categories. Weightlifting Skills performance Snatch and Clean & Jerk data was collected from the (official records) result of Competition as dependent variable.

Corresponding Author:

Dr. Parmod Kumar Sethi

Associate Professor, Department
of Physical Education and
Sports Sciences, PGDAV College
(E) University of Delhi, Delhi,
India

The data analysis of measurement of Quadriceps, Gluteus and hip flexors muscles power (legs) was carried out through Standing Broad Jump tests (SBJ) selected as independent variable.

All the subjects were given 10 minutes for warming up and practice the Standing Broad Jump Test (SBJ) so that they are familiar with the test and know exactly what was to be done. The use of apparatus and Procedure was explained to them prior to the administration of the test. Three attempts were given to each subject. The best of three attempts were recorded as a personal score of SBJ. All the equipments for test as tools were standardized and certified. The variables used in study are shown in table 1.

Table 1: Variables used for the study

S. No	Variables	Test and Performance
1.	Weightlifting skills Performance	Maximum Snatch and Clean & jerk (in Kg)
2.	Quadriceps, Gluteus and hip flexors muscles Power	Standing Broad Jump (in Inches)

Statistical Procedure

Statistical Software R version 4.1.0 was used to Calculate

Table 3: Analysis of data in the table below shows that significant relationship was obtained between Quadriceps, Gluteus and hip flexors Muscle Power and Weightlifting skills performance Snatch and Clean and Jerk. Therefore, it is evident that Quadriceps and Gluteus Muscle Power can be considered as a benefit to weightlifting skills.

S. No	Variables	"r" Value	N
1.	Weightlifting Skill Performance Snatch with Quadriceps, Gluteus and hip flexors Muscle Power (SBJ)	0.52	50
2.	Weightlifting Skill Performance Clean & Jerk with Quadriceps, Gluteus and hip flexors Muscle Power (SBJ)	0.47	50

N= 50

*Significant at 0.05 level of Confidence

The relationship of Snatch and Clean Jerk between Standing Broad Jump (SBJ) in graphically presented in Figures 1 and 2.

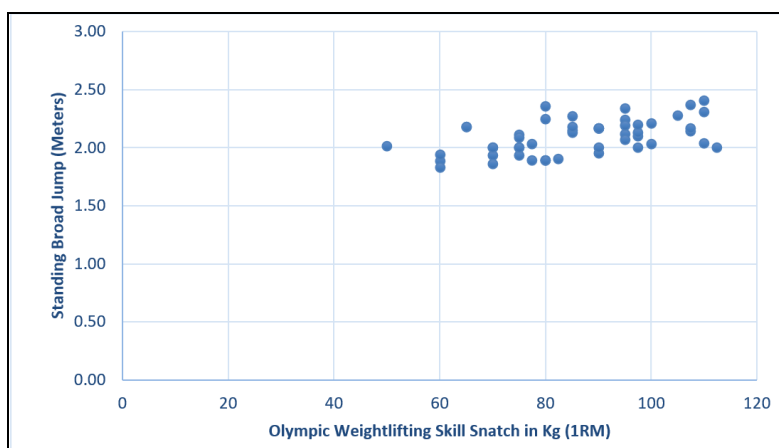


Fig 1: Correlation($r=.52$) between Quadriceps, Gluteus and hip flexors Muscle Power (SBJ) and weightlifting skill Snatch

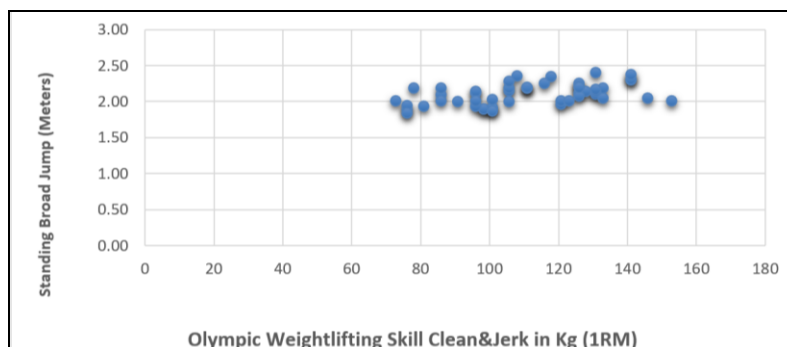


Fig 2: Correlation($r=.47$) between Quadriceps, Gluteus and hip flexors Muscle Power (SBJ) with weightlifting skill Clean and Jerk

Person’s Product Movement Correlation to find out the relationship between Quadriceps and Gluteus muscles Power with Olympic Weightlifting skills Performance i.e. Snatch and Clean& Jerk. The significance level was determined as 0.05.

Results

Descriptive statistics was calculated for the study to analyze the relationship between Quadriceps, Gluteus and hip flexors muscles Power and Olympic Weightlifting skills Performance i.e. Snatch and Clean Jerk as shows in table 2.

Table 2: Shows the Mean and Standard Deviation scores of Weightlifting skills performances and Quadriceps, Gluteus and hip flexors Muscle power (SBJ).

S. No	Variables	Mean	S.D	N
1.	Weightlifting Skill Performance Snatch	85.95	15.31	50
2.	Weightlifting Skill Performance Clean & Jerk	110.56	20.58	50
3.	Quadriceps, Gluteus and hip flexors Muscle Power of legs (Standing Broad Jump)	2.09	0.14	50

Findings

Discussion of findings

In the present study the relationship between independent variables Quadriceps, Gluteus and hip flexors Muscle Power with dependent variables weightlifting skills performance has shown that Quadriceps, Gluteus and hip flexors Muscle Power (Legs) were found to be significantly related with the weightlifting skill performance snatch and clean & jerk. These study results have shown that power of Quadriceps, Gluteus and hip flexors muscles (Leg) is one of the contributing factors for optimum performance in Olympic weightlifting skills. In Olympic weightlifting training plan, lifters use back and front squat sessions for improving the legs power or strength. This also helps in seating, standing or pushing movements during snatch or clean & jerk performance.

As evident from the results, the efficiency of legs muscles power is the main factor for high sporting results in snatch and clean & jerk performance. Similar views are also given by A N Varobyr in this book, 'A Text Book of Weightlifting' Published by international weightlifting Federation (1978) ^[6].

Conclusion

The study confirmed that there is significant positive Pearson's correlation observed between Quadriceps, Gluteus and hip flexors power (Leg muscles) with weightlifting skills snatch and clean & jerk performance of all (n=50) lifters. The study also justifies that leg muscle power is a valuable contributor to lifters for snatch and clean & jerk performance and the future training plans.

Practical Application

For the present study, restraint were recognized to understand the relationship between variables Quadriceps, Gluteus and hip flexors Muscle Power with weightlifting skills snatch and clean performance & jerk. Although there are many factors that can contribute to the result in weightlifting performance in training and competitions but leg muscle power is an important contributor to lifters for future training plans.

References

1. Arabatzi F, Kellis E. Olympic weightlifting training causes different knee muscle-co activation adaptations compared with traditional weight training Strength Cond Res. 2012;26(8):2192-201.
2. Christin H, *et al.* Training Strategies to Improve muscle Power: Is Olympic -style weightlifting. Medicine and Science in sports and Exercise. 2016;49 (4):736-745.
3. Singh, Vikram, Parmod, Kumar Sethi. A study of relationship between performance of selected fitness components of state and national level weightlifters. International Journal of Physiology, Nutrition and Physical Education. 2018;3(2):892-896.
4. Sethi, Parmod Kumar, Vineet Mehta. Analysis of the relationship between triceps, biceps, pectorals and scapular muscles strength with Olympic weightlifting skills. International Journal of Physiology, Nutrition and Physical Education. 2021;6(1):342-345.
5. Sethi, Parmod Kumar, Vikaram Singh. The study of relationship of abdominal muscles strength endurance and static balance to Olympic weightlifting snatch skills. International Journal of Physiology, Nutrition and Physical Education. 2019;5(1):62-64.
6. Vorobyev AN. Weightlifting International Weightlifting Federation, Budapast, XIV, cozsegy, Publisher. 1978;13:21-22.
7. www.Aranance.com