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Analysis of the relationship between triceps, biceps, pectorals and scapular muscles strength with Olympic weightlifting skills

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Abstract

The purpose of the study was to analyse the relationship between Triceps, Biceps Pectorals and Scapular Muscles Strength with the Weightlifting Performance. Male Subjects (n=100) (Age18–20) were selected randomly from different levels of sports Competitions from Delhi University Colleges, Inter University and state competitions. The data of weightlifting skills Snatch and Clean Jerk was collected through the official records of State, Inter College and Inter university competitions of three years 2017, 2018 & 2019. Triceps, Biceps Pectorals and Scapular Muscles strength was Measured by Bench Press (1 RM) and Over head Front Press (1RM) tests. Person's Product Movement Correlation ($P>5$) was used to find out relationship of Triceps, Biceps, Pectorals, and Scapular Muscles strength with Weightlifting skills Performance. The result of the present study shows that weightlifting skill Snatch is significantly related to Over head Front Press ($r=.66$) and Bench Press ($r=.83$). Clean & jerk skill performance significant relationship also found with Front Press ($r=.70$), Bench Press ($r=.85$).

Keywords: weightlifting, snatch, clean & jerk, bench press, over head front press

Introduction

Olympic weightlifting skills movements Snatch and Clean & Jerk are required strength- speed combination for lifters to perform on heavy loads during the competitions or training as quickly as possible with high level of explosive muscles strength. Coaches and Players try to identify the specific muscles to support and strengthen the performance in Weightlifting skills clean & Jerk and Snatch in a better way. The Purpose of this research was to study the Analysis of the relationship between Triceps, Biceps, Pectorals and Scapular Muscles strength with Olympic- Style Olympic Weightlifting skills.

Purpose of the study

Analysing the relationship between Triceps, Biceps, Pectorals and Scapular muscles strength with the Weightlifting Skills i.e. Snatch and Clean & jerk.

Materials and Methods

The Male subjects (n-100) (Age18–20) were selected from practicing and participating all over Delhi University colleges, Inter University and state competitions and weightlifting centers of Delhi–NCR in North India and through personal interaction with the coaches and players after obtaining permission to conduct the study with the weightlifters.

Procedure

The Weightlifting performance skills i.e Snatch and Clean & Jerk data was collected from the different levels of the different Competitions records of three years 2017, 2018 and 2019. The data was gathered from the Triceps, Biceps, Pectorals and Scapular Muscles strength tests with Bench Press (1RM) and Over head front press (1RM). All the subjects were given 10 minutes for warming up for the tests and Instructions to progressively increase the weight until they determine the one repetition (1RM) maximum weight that is able to be lifted for bench press and Front press tests. All the equipments used for test tools are standardized and certified by different sports federations& company.

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Statistic Procedure

R' version 4.1.0 statistical software was used to Calculate Person's Product Movement Correlation to find out the relationship between Triceps, Biceps and Scapular muscles

strength with the Weightlifting Performance i.e. Snatch and Clean & Jerk. In using Person's Product Moment Correlation, a value of 0.195 was needed for significance at the 0.05 level of Confidence for 98 degree of freedom.

Table 1: Tools used in the study Tools

Weightlifting Skill Performance	Tests
Maximum Snatch in K. g	Bench Press (1 RM)
Maximum Clean& Jerk in K.g	Over Head Front Press (1RM)

Table 2: Shows the variables and test used for the study

S. No.	Variables	Test used	N
1.	Triceps, Biceps, Pectorals Muscles Strength	Bench Press	100
2.	Scapular Muscles Strength	Over head Front Press	100

Results

Descriptive statistics for the study to Analysis of the relationship between Triceps, Biceps, Pectorals and Scapular

muscles strength with the Weightlifting Performance i.e. Snatch and Clean & Jerk.

Table 3: Show the Mean and Standard Deviation of Scores of weightlifting skills Snatch and Clean & Jerk and Bench Press & over Head Front Press muscle strength test

S. No.	Variables	Means	S.D	N
1.	Weightlifting skill Snatch	94.56	22.02	100
2.	Weightlifting skill Clean & Jerk	120.93	27.81	100
3.	Triceps, Biceps, Pectorals Muscles Strength (Bench Press Test)	88.20	11.75	100
4.	Scapular Muscles Strength (Over head Front Press Test)	75.65	11.56	100

Table 4: Analysis of data in the table 4 below Indicates that significant relationship was obtained between Triceps, Biceps, Pectorals muscles strength (0.83) and Scapular Muscles Strength (.66) with the Snatch. The triceps, Biceps and Pectorals Muscles Strength (0.85), and Pectorals and Scapular muscles strength (.70) also shows the significant relationships with Clean and Jerk. Therefore it is evident that Triceps, Biceps, Pectorals muscle strength and Pectorals and Scapular muscles strength contributes to Weightlifting Skills

S. No	Variables	'r' Value	N
1.	Weightlifting skill Snatch Performance with Triceps, Biceps, Pectorals muscles strength (Bench Press Test)	0.83	100
2.	Weightlifting skill Clean& Jerk Performance with Triceps, Biceps, Pectorals muscles strength (Bench Press Test)	0.85	100
3.	Weightlifting skill Snatch Performance with Scapular muscles strength (Front Press Test)	0.66	100
4.	Weightlifting skill Clean& Jerk Performance with Scapular muscles strength (Front Press Test)	0.70	100

N=100

*Significant at .05 level of Confidence

The relationship of Triceps, Biceps, Pectorals and Scapular Muscles Strength with Olympic Weightlifting skills i.e.

Snatch and Clean & Jerk graphically presented in Figures 1, 2, 3 and 4.

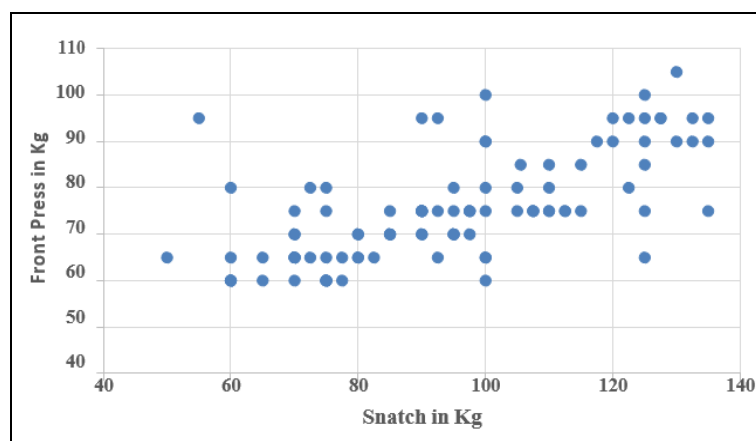


Fig 1: Correlation between Snatch and Front Press

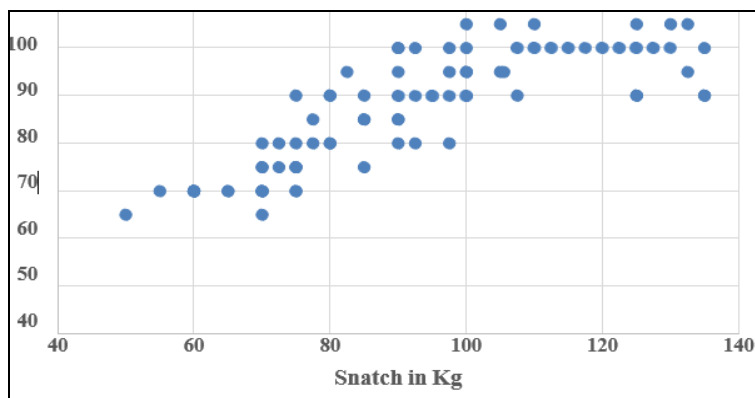


Fig 2: Correlation between Snatch and Bench Press

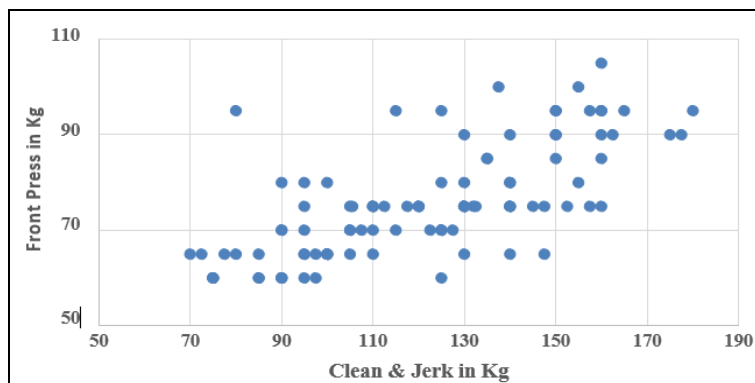


Fig 3: Correlation between Clean & Jerk and Front Press

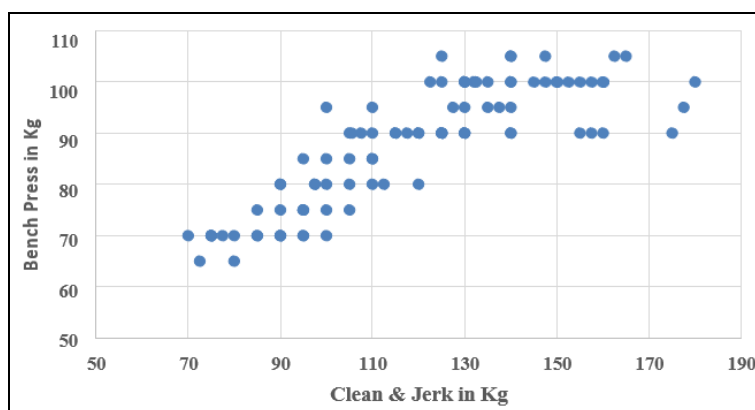


Fig 4: Correlation between Clean & Jerk and Bench Press

Discussion of findings

The analysis of data in respect of relationship of independent variables Relationship of Triceps, Biceps, Pectorals and Scapular Muscles Strength with the dependent variables Weightlifting skill Snatch and Clean & Jerk performance has shown that Triceps, Biceps, Pectorals and Scapular Muscles Strength in the study are found to be significantly related.

Conclusions

It was observed that there is significant Correlation between Triceps, Biceps, Pectorals and Scapular Muscles Strength with weightlifting skills snatch and Clean & Jerk performance of all (n=100) the lifters, (Bench press test and over head fount press test). The study also justifies, as per the results, that Triceps, Biceps, Pectorals and Scapular Muscles Strength are a valuable part of the weightlifting skill performance snatch & Clean & Jerk and training programme. Before prescribing additional strengthen exercises for Triceps, Biceps, Pectorals and Scapular Muscles a musculoskeletal assessment of the Chest or shoulder areas should be

performed to establish lifters individual needs.

Implication of research findings

For the study, limitations were acknowledged and the focus is primarily to understand the relationship between Triceps, Biceps, Pectorals and Scapular Muscles Strength to Weightlifting skill Snatch and Clean & Jerk. The findings of the study suggestions can help to coaches and players to make future weightlifting training plan.

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