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Correlation between the strength variables and the force vital capacity determinants of vital capacity of tribal and non-tribal sportsperson

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Abstract
The present study investigates the correlation between the strength variables and the force vital capacity determinants of vital capacity of tribal and non tribal sportsperson. To solve the purpose of study 400 randomly selected sportsmen (200 tribal and 200 non- tribal) of Himachal Pradesh were taken as the sample. Null hypothesis had been framed for the present study. Strength measured by Pull-ups, Bent Knee sit-ups, standing broad jump, medicine ball put and soft ball throw and Force vital Capacity measured by Spiro meter. The data was analyzed by using Statistical Package for the Social Sciences. The statically tools used for the study Karl Pearson's co-efficient of correlation.

Keywords: Strength variables, Force vital capacity, non-tribal sportsperson

Introduction
Strength is a conditional ability i.e., it depends largely on the energy liberation processes in the muscles. Strength is also perhaps the most important motor ability in sports as it is a direct product of muscle contractions. All movements in sports are caused by muscle contraction and, therefore, strength is a part and parcel of all motor abilities, technical skills and tactical actions.

Strength and strength training, therefore, assume high importance for achieving good performance in all sports. The role of strength training for general health, good posture and for prevention of injuries is usually overlooked which in the long run can prove harmful.

Strength is the ability to overcome resistance or to act against resistance. Strength should not be considered a product of only muscular contractions. It is, in fact, a product of voluntary muscle contractions caused by the neuro-muscular system.

In sports movements, strength always appears in some combination with the duration and speed of movement i.e., in combination with endurances and speed abilities. In each sports movement strength appears in a different form.

Maximum strength: it is the ability to overcome or to act against maximal resistance. It is measured by finding out the maximum resistance which can be overcome or the maximum force which can be applied by the muscles. The maximum strength is a motor ability and involves force application during a voluntary movement. The muscles normally are capable of generating higher magnitudes of force if stimulated electrically. The electrical stimulation causes maximal contraction of all motor units in a muscle which normally cannot be achieved voluntarily except under extreme emotional state of fear, anger etc.

A spirometry measures the volumes of air inspired and expired and therefore changes in lung volume. Although more sophisticated spirometers are used today, a simple spirometer contains a bell filled with air that is partially submerged in water.

A tube runs from the person's mouth under the water and emerges inside the bell, just above the water level. As the person exhales, air flows down the tube and into the bell, causing the bell to rise. The bell is attached to a pen, and its movement is recorded on a simple rotating drum.

This technique is used clinically to measure lung volumes, capacities, and flow rates as an aid in diagnosing such respiratory diseases as asthma, as mentioned in the opening story, and

emphysema.

The amount of air entering and leaving the lungs with each breath is known as the tidal volume. The vital capacity is the greatest amount of air that can be expired after a maximal inspiration. The amount of air remaining in the lungs after a maximal expiration is the residual volume. The residual volume cannot be measured with spirometry. The total lung capacity is the sum of the vital capacity and the residual volume.

Methodology

In the present study investigator was employed random sampling method. The sample for the present study relationship between tribal and non tribal sportsperson of Himachal Pradesh. To solve the purpose of study 400 randomly selected sportsmen (200 tribal and 200 non- tribal) of Himachal Pradesh were taken as the sample. Null hypothesis had been framed for the present study. Strength measured by Pull-ups, Bent Knee sit-ups, standing broad jump, medicine ball put and soft ball throw and Force vital Capacity measured by Spiro meter. The data was analyzed by using Statistical Package for the Social Sciences. The statically tools used for the study Karl Pearson's co-efficient of correlation.

Results and Findings

Within the limitations and delimitations of the present study following results are drawn:

Table 1: Correlation between the Strength variables and the Force vital capacity determinants of vital capacity of tribal area sportsperson

Variable		N	Mean	SD	Value of Coefficient of Correlation				
					Pull Ups	Bent Knee Sit-ups	Standing Broad Jump	Medicine Ball Put	Softball Throw
Strength	Pull Ups	200	7.30	2.780	-.010	-.031	-.055	.072	-.006
	Bent Knee Sit-ups		23.51	8.423					
	Standing Broad Jump		1.96	.221					
	Medicine Ball Put		6.21	1.086					
	Softball Throw		41.73	6.103					
Determinant of Vital Capacity	FVC		3.54	.701					

Table no-1 indicate the relationship of strength variables with force vital capacity determinants of vital capacity of tribal area subjects the number of subjects in 200 (N=200).

Sample number is two hundred (N=200). Mean values of strength variables, pull-ups, bent knee sit-ups, standing broad jump, medicine ball put, softball throw are 7.30, 23.51, 1.96, 6.21 and 41.73 respectively. Mean value of Force vital capacity, determinant of vital capacity is 3.54. Standard deviation of pull-ups - 2.78, bent knee-sit-ups 8.42, standing broad jump .221, and medicine ball put 1.086, and softball throw 6.103 and of force vital capacity determinant of vital capacity is 3.54.

Whereas coefficient of correlation between pull-ups and Force vital capacity determinant of vital capacity is -.010 indicating that there exists negative insignificant correlation, bent knee sit-ups and Force vital capacity determinant of vital capacity is -0.31 means that there exists negative insignificant correlation, standing broad jump and Force vital capacity determinant of vital capacity is -.055 indicating negative insignificant correlation, medicine ball put and Force vital capacity determinant of vital capacity is .072 which indicates that, there exists positive correlation and coefficient correlation between softball throw and Force vital capacity determinant of vital capacity is -.006 indicating that there exists negative insignificant correlation.

The obtained results verify the existing fact that the strength has negative relationship with force vital capacity. Established facts that strength has positive and effective relationship with Force vital capacity as given in physiology of sport and exercise, chapter no 6th, page no 144, 145, 146, 147, Edition fourth edition and year 2004, 1999, 1994 and Authored by Jack H. Wilmore, David L.costill, W.Larry Kenney. Science of sports training, chapter no 6th, page no 85, first edition and year 1997, 1995 Authored by Hardayal Singh. Fundamentals of exercise physiology by G.M Scott & R.G. Brown chapter no 5, page no72, 73, first Edition and year 2010.

Table 2: Correlation between the Strength variables and the Force vital capacity determinant of vital capacity of non- tribal area sportsperson

Variable		N	Mean	SD	Value of Coefficient of Correlation				
					Pull Ups	Bent Knee Sit-ups	Standing Broad Jump	Medicine Ball Put	Softball Throw
Strength	Pull Ups	200	7.19	2.839	-.097	.015	-.052	.126	-.008
	Bent Knee Sit-ups		23.77	8.171					
	Standing Broad Jump		1.82	.402					
	Medicine Ball Put		5.77	1.223					
	Softball Throw		42.43	5.475					
Determinant of Vital Capacity	FVC		3.64	.796					

Table no-2 indicate the relationship of strength variables with force vital capacity determinant of vital capacity of Non- tribal area subjects the number of subjects in 200 (N=200).

Sample number is two hundred (N=200). Mean values of strength variables, pull-ups, bent knee sit-ups, standing broad jump, medicine ball put, softball throw are 7.19, 23.77, 1.82, 5.77 and 42.43 respectively. Mean value of Force vital capacity, determinant of vital capacity is 3.64.Standard deviation of pull-ups - 2.839, bent knee-sit-ups 8.171, standing broad jump .402, medicine ball put 1.223, softball throw 5.475 and of Force vital capacity determinant of vital capacity is .796.

Whereas coefficient of correlation between pull-ups and

Force vital capacity determinant of vital capacity is -.097 indicating that there exists negative insignificant correlation, bent knee sit-ups and Force vital capacity determinant of vital capacity is .015 means that there exists insignificant correlation, standing broad jump and Forces vital capacity determinant of vital capacity is -.052 indicating negative insignificant correlation, medicine ball put and Force vital capacity determinant of vital capacity is .126 which indicates that, there exists positive correlation and coefficient correlation between softball throw and Force vital capacity determinant of vital capacity is -.008 indicating that there exists negative insignificant correlation.

The obtained results verify the existing fact that the strength has negative relationship with vital capacity.

Established facts that strength has positive and effective relationship with Force vital capacity as given in physiology of sport and exercise, chapter no 6th, page no 144, 145, 146, 147, Edition fourth edition and year 2004, 1999, 1994 and Authored by Jack H. Wilmore, David L.costill, W. Larry Kenney. Science of sports training, chapter no 6th, page no 85, first edition and year 1997, 1995 Authored by Hardayal singh. Fundamentals of exercise physiology by G.M Scott & R.G. Brown chapter no5, page no 72, 73, first Edition and year 2010.

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