Welcome

To

My presentation

# Research topic

**Correlation between core stability and upper extremity performance in cricket bowler in Dhaka city.**


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# Introduction

Cricket is a bat-and-ball sports that is played between two teams of eleven players on a field that has a wicket at each end made up of two bails balanced on three stumps. The pitch measures 22 yards (20 meters) in length. (ICC).

Researcher said that, the term "core" refers to the muscles that surround the pelvis, hips, and low back. These core muscles' primary function is to keep the pelvis in a neutral position while protecting the lumbar spine. It is essential for transmitting forces from the trunk to the extremities. In order to improve sports performance and lower the risk of injuries, core training has become a crucial component of all sports training and is frequently employed by sports trainers and coaches (Shaiks et al.,2019).

Four endurance tests were used to assess the stability of the core: sustained flexion, extension, left and right side-bridge. This study was the first to include an upper extremity performance test that involved throwing a medicine ball overhead while leaning backwards (silfies et al., 2015).

# Introduction con..

In particular, the UQYBT has been used to simultaneously evaluate the athletes' functional limits and dynamic balance, strength, mobility, and core stability (kim, Y.2020).

When performing functional activities, core stability refers to the capacity to regulate the position and movement of the trunk for the best force generation, transfer, and control to the upper and lower extremities. Core stability depends heavily on muscular strength and neuromuscular control. A small amount of research suggests a connection between core stability and upper extremity injuries in athletes who play football, baseball, or swimming. Similar to this, there aren't many researches that back up a connection between core stability and athletic performance. (silfies et al., 2015).

# Justification

The aim of this study is to determine the core stability and upper extremity performance in cricket bowler. Cricket is most popular game in the world. This research will be essential for cricket player.

I think this kind of research provide and will be able to find out more information about cricket bowler strength, stability, speed, and other beneficial things.

# Research question

Is there any relation between core stability and upper extremity performance in cricket bowler ?

# Objectives

**1. General objectives :** To examine the relationship between core stability and upper extremity performance among the cricket bowlers.

**2. Specific objective:**

- To assess the core stability by McGill test and agility T test of cricket bowlers among Dhaka city
- To measure the upper extremity performance by UQYB test, MBT test, BS test, in cricket bowlers.
- To determine the sociodemographic information of the study participant.
- To examine the correlation between core stability and upper extremity performance.

# Conceptual Frame Work

## Independent variable

**sociodemographic factor:**

Age, Height, Weight, BMI,

Year of experience,

Level of play,

General health status.

UQYBT, MBTT,

Agility t test,

McGill test

Bowling speed.

## Dependent variable

core stability and

upper extremity performance

# Methodology

- Study design**:** It was a cross sectional type of descriptive study.
- Study area: Data were collected from the cricket bowlers of BKSP and city club in Dhaka city.
- Study population: Players of BKSP and city club constituted the study population for the present population .
- Sampling technique : Convenience sampling technique was applied to select cricket bowlers from the study population collect .

# Methodology con…

- Sample size:
- We know that;
- $N = [(Z\alpha+Z\beta) /C]^2 +3$ ( sohel et al., 2021)
- Here,
- N = Required sample size.
- The standard normal deviate for $\alpha = Z\alpha= 1.96$
- The standard normal deviate for $\beta= Z\beta= 1.282$
- r = 460
- $C = 0.5 * \ln[(1+r)/(1-r)] = 0.4973$

# Methodology con…

- so,
- $N = [(Z\alpha+Z\beta) /C]^2 +3$
- $N= [(1.96+1.282) / 0.4973]^2 + 3$
- $N= (3.242 / 0.4973)^2 + 3$
- $N= ( 6.519)^2 + 3$
- $N= 42.49 + 3$
- $N= 45.49$
- So, sample size 45.

# Methodology con…

**Inclusion criteria**

- Cricket bowler
- Up to U18 cricket bowler
- Among Dhaka city
- Who are willingly participate
- Male player

# Methodology con…

**Exclusion criteria**

- Physically unfit
- Below U18 cricket bowler
- Pain in the body
- Rehabilitation player

# Methodology con…

**Method of data collection:**

- Sociodemographic information of the participant was collected by interview.
- Core stability score was measure by McGill test and agility T test.
- Upper extremity performance was measure by UQYBT, MBTT, and bowling speed test.

**Instrument of data collection:**

- Questionnaire

# Methodology con…

**Data collection procedure:**

- Upper quarter Y balance test
- Agility T test
- Medicine ball through test
- Core stability test

**Tools:**

- Data will be collect by using-
- Questionnaire and test paper
- Consent paper
- Medicine ball

# Methodology con…

- Measurement tape
- Cloth tape
- Wood piece

**Data analysis:**

- Collected data were rechecked for any error or inconsistency.
- Necessary correction were done accordingly.
- Data were coded and enter into the computer.
- Data was analyzed by using SPSS. (25 version)

# Methodology con…

**Ethical consideration**

- The investigator will obtain written permission from ethical review board (SCMST). Ethical review board informed by written document about aims and objectives of the study and that the patients of the study will not harmed or the clients name, address and personal information will be kept confidential by the investigator mentally and the dates will not be shared with others.

# Result

The study aimed to find out the correlation between core stability and upper extremity performance in cricket bowler in Dhaka city. The data was collected by researcher himself. The data were numerically coded and analyzed with the Microsoft office excel 2010 with SPSS 25 version software Program.

# Demographic details of Participants-

| variable | Mean ± SD |
|---|---|
| Age (year) | 20.17 ± **13.61** |
| Weight (kg) | 69.17 ± 6.802 |
| Height (cm) | 163.80 ± **12.259** |
| BMI ($Kg/m^2$ | 22.54 ± 3.123 |

# Demographic detail of participants-

| variable | | frequency | percentage |
|---|---|---|---|
| Level of play | Elite | 18 | 51.4% |
| | U-18 | 6 | 17.1% |
| | U-19 | 11 | 31.4% |
| Year of experience | >5 | 32 | 91.4% |
| | 3-5 | 1 | 2.9% |
| | <3 | 2 | 5.7% |
| In general health status | very good | 32 | 91.4% |
| | good | 3 | 8.6% |

# Performance test score

| Test | value = mean ± SD |
|---|---|
| UQYBT Right (cm) | 109.94 ± 12.267 |
| UQYBT Left (cm) | 109.74 ± 10.164 |
| Agility t test | 10.93 ± 0.795 |
| MBTT TEST | 4.422 ± 0.4513 |
| Bowling speed | 129.97 ± 1.992 |
| Core stability score | 288.400 ± 19.1099 |
| | |

| **Flexion endurance test** | **84.57 ± 4.307** |
| --- | --- |
| Extension endurance test | 73.94 ± 6.338 |
| Side bridge test Right | **65.26 ± 6.437** |
| Side bridge test Left | 64.51 ± 6.209 |

# Result con…

## Correlation between core stability score and UQYBTR score:

In this study 35 cricket bowler were participate. Spearman's rank was used to explore the relationship between core stability score and UQYBTR. The rank order correlation was negative and week $r_s$ (35) = -0.018, p=0.920, tow-tailed.

| Test | P-value | Spearman correlation (r) |
|---|---|---|
| Core stability test and UQYBTR | 0.920 | -0.018 |

# Result con…

Correlation between core stability score and UQYBTL score:

In this study 35 cricket bowler were participate. Spearman's rank was used to explore the relationship between core stability score and UQYBTL. The rank order correlation was negative and week $r_s$ (35) = -0.155, p=0.374, tow-tailed.

| Test | P-value | Spearman correlation (r) |
|---|---|---|
| Core stability test and UQYBTL | 0.374 | -0.155 |

# Result con..

Correlation between core stability score and Agility T test score :

In this study 35 cricket bowler were participate. Spearman's rank was used to explore the relationship between core stability score and Agility T test. The rank order correlation was negative and week $r_s$ (35) = -0.035, p=0.843, tow-tailed.

| Test | P-value | Spearman correlation (r) |
|---|---|---|
| Core stability score and agility T test | 0.843 | -0.035 |

# Result con…

Correlation between core stability score and Medicine ball through test score –

In this study 35 cricket bowler were participate. Spearman's rank was used to explore the relationship between core stability score and medicine ball through test. The rank order correlation was significant negative and moderate $r_s$ (35) = -397, p= 0.018, tow-tailed.

| Test | P-value | Spearman correlation (r) |
|---|---|---|
| Core stability score and MBTT | 0.018 | -397 |

# Result con…

Correlation between core stability score and bowling test score :

In this study 35 cricket bowler were participate. Spearman's rank was used to explore the relationship between core stability score and bowling speed test. The rank order correlation was negative and weak $r_s$ (35) = -0.189, p=0.277, tow-tailed.

| Test | P-value | Spearman correlation (r) |
|---|---|---|
| Core stability score and BS test | 0.277 | -0.189 |

# Discussion

Although it has believed that core stability is a vital component of an athlete's peak performance. The study showed that only the scores in a few upper-extremity performance tests were significantly or insignificant correlated with core stability measures.

A significant moderate positive correlation with the UQYBT score ($p = 0.01$, $r = 0.46$) (Nuhmani ,.2022). In this research the rank order correlation between core stability and upper quarter Y balance test was negative and week $r_s$ (35) = -0.155, p=0.374.

The results demonstrated a considerable strong positive association between core stability and bowling speed r=0.736, p= 0.0001 (anand et al ., 2017). In this study 35 cricket bowler were participate. Spearman's rank was used to explore the relationship between core stability score and bowling speed test. The rank order correlation was negative and weak $r_s$ (35) = -0.189, p=0.277.

The findings demonstrated a significant negative relationship between core stability and agility T test, (sonoda et al,. 2018). In this study, the rank order correlation was negative and week $r_s$ (35) = -0.035, p=0.843.

# Discussion con..

The core stability test was inversely connected with the medicine ball throw (r -0.389, p=0.023). Participants who scored better on the core stability test had a greater negative association (r =-0.527) with the medicine ball throw (sharrock et al,. 2011). In this present study core stability is fairly correlated with medicine ball throw with P value 0.018. The rank order correlation was significant negative and moderate.

# Conclusion and recommendation

- This study aims to find out the correlation between core stability and upper extremity performance. The findings of this study show that core stability measure, such as the McGill test and agility T test. Also show that upper extremity performance, such as the upper quarter Y balance test, medicine ball through test, and bowling speed test. Core stability is significantly negative correlated with medicine ball through test. Correlation between core stability and upper quarter Y balance test was non-significant negative correlated. Another correlation between core stability and agility test was insignificant negative correlated result found.
- This research makes a valuable contribution to cricket bowlers. This study is limited to small number of participants and it was only conducted in one city therefore the findings cannot be generalized. The participant of this study was so busy and they cannot make sure appropriate performance test that is needed. Participants in the research were not used to this kind of physical test. It make difficult to find appropriate test data. Despite this limitation this study makes an important contribution because physical test are very important for cricket player. To know body strength, ability, speed, and performance.

# Con...

**limitation**

1.Due to scarcity of time ,it was possible to take 35 data even though the sample size was 45.

2.It takes a lot of time to test so there is problem in getting the data.

3.Due to the busy schedule of cricketers.

# Reference

1. Pontillo, M. and Butowicz, C.M., 2015. Critical review of the impact of core stability on upper extremity athletic injury and performance Brazilian journal of physical therapy, 19, pp.360-368.

2. Shaikh, A.I., Nuhmani, S., Kachanathu, S.J. and Muaidi, Q.I,2019. Relationship of core power and endurance with performance in random intermittent dynamic type sports asian journal of sports medicine, 10 (1).

3.Nuhmani,S.,2022.correlation between core stability and upper-extremity performance in male collegiate athletes. Medicine,58(8),p.982.

4. Sonoda, T., Tashiro, Y., Suzuki, Y., Kajiwara, Y., Zeidan, H., Yokota, Y., Kawagoe, M., Nakayama, Y., Bito, T., Shimoura, K. and Tatsumi, M., 2018. Relationship between agility and lower limb muscle strength, targeting university badminton players. journal of physical therapy science, 30(2),pp.320-323.

# Reference con..

5. Sharrock, C., Cropper, J., Mostad, J., Johnson, M. and Malone, T., 2011. A pilot study of core stability and athletic performance: is there a relationship?. International journal of physical therapy, 6(2), p.63.

6. Kim, Y., Lee, J.M., Wellsandt, E. and Rosen, A.B., 2020. Comparison of shoulder range of motion, strength, and upper quarter dynamic balance between NCAA division I overhead athletes with and without a history of shoulder injury Physical therapy in sport, 42,pp.53-60.

6. Ahmed, S., Saraswat, A. and Esht, V., 2022. Correlation of core stability with balance, agility and upper limb power in badminton players: a cross-sectional study. sport science for health, pp.1-5.

7. International cricket councle.

# THANK YOU