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Editorial

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The World Health Organisation (WHO) defines health as 'a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity' (WHO, 1948).' Human health, therefore, is not a single-variable state of existence but depends on the conditions and functioning of the physical, physiological and psycho-sociological dimensions. The broadening and multi-variable definition of health has contributed to improving understanding of the mental dimension of health and wellbeing. Although our knowledge of the determinants influencing human health is growing, the highly interrelated nature of the mental and physical factors of health tends to be overlooked. Despite knowing the significance of body and mind to sustain life, human beings seem to neglect consciously working on both in an interconnected fashion. In today's modern age, one sees numerous awareness campaigns about mental and physical health being two sides of the coin yet the older ideas about mind body duality persists very strongly.

In some cases, individuals give importance only to physical health. For example, an individual who regularly visits the gym but is mentally pessimistic. In other cases, there are people who are more particular about mental wellness. For instance, people practice mindfulness and so on but they live sedentary days, putting them at risk of lifestyle diseases. And in yet other cases, people do not and/or cannot invest in both physical or mental health. The above three scenarios were exacerbated during the pandemic. Without access to gyms, people who only value physical health became more cynical and unfulfilled because they do not have a strong mental framework. Due to lockdown-induced work from home, constant strain in front of computers has worsened the physical health of those who do not devote any time to it. The people who are stuck in the third scenario naturally suffer the most.

If nothing else, the above three examples and how they play out should make us strive actively for human health because without it one hardly remains a 'human'.

Hence, every human being, be it of whatever age or gender, should commit to regular, holistic fitness related activities. Physical movement as well as mentally relaxing activities should become a habit just like the other mandatory things in our daily routine. In this way, come what may, we become capable of maintaining our humanity and health.

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The Correlation of Vertical Jump Test Measurement Between Force Platform and Jumpster Android Smartphone Application

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Abstract:

Vertical jump (VJ) testing can provide muscular power index which is an important component to enhance related sport performance. This data can provide strength and conditioning practitioner, sport coaches, health care professional or physical activity teachers to measure physical performance and identify talent, measure readiness and fatigue, process of development and improvement indicator of an athlete's lower body power. The purpose of this study was to investigate the criterion validity of android smartphone application (Jumpster) with force platform for measuring vertical jump height. 30 physically active males from Reserve Officer Training Unit (ROTU) of University Malaysia Sarawak (UNIMAS) and 18 physically active males from Auxiliary Police Unit of University Teknologi Mara (UiTM) Sarawak with a total of 48 participants between the age of 20 to 29 (24.33 ± 2.44) has been recruited in this study. Each participant performed 3 trial of countermovement jump on a force platform simultaneously recorded with Jumpster application that placed on waist with waist belt. Each jump was separated with a 2-minute passive rest period. Results showed that there was a strong, positive correlation between Jumpster and force platform ($r = 0.863$, $p = < 0.001$). It was concluded that Jumpster is an appropriate and valid tool to be used as a VJ assessment for athletes includes the uniform body organization in an economic way. This measurement is not limited to areas of sporting performance but also in areas of health and fitness.

Keywords: Jump height, Jumpster, force platform, vertical jump, countermovement jump

Introduction:

Ability to generate power to execute related actions such as jumping, sprinting and change of direction can give significant influence towards athlete's performance (Lockie, Jalilvand, Callaghan, Jeffriess, & Murphy, 2015; McFarland, Dawes, Elder, &Lockie, 2016). The explosive movement or action can be measured with vertical jump (VJ) testing where it can provide muscular power index which is an important component to enhance related sport performance (Buckthorpe, Morris, &Folland, 2012).

Strength and conditioning practitioner, sport coaches, health care professional and physical activity teachers generally use VJ height to measure physical performance and identify talent (Gabbett, Georgieff, & Domrow, 2007; Yingling et al., 2018). VJ height assessment also a useful tool to measure readiness and fatigue (Watkins et al., 2017), weightlifting ability (Carlock et al., 2004), neuromuscular fatigue (Gathercole, Sporer, Stellingwerff, & Sleivert, 2015) and bone health (Janz, Letuchy, Burns, Francis, & Levy, 2015; Yingling, Webb, Inouye, O, & Sherwood, 2017), process of development and improvement indicator of an athlete's lower body power (Lockie et al., 2015; McFarland et al., 2016).

Numerous device with current technology has been developed to measure VJ height, such as contact mats, velocity systems, linear position transducers (Yingling et al., 2018), force platform, Vertec and iphone application (Balsalobre-Fernandez, Glaister, &Lockey, 2015; Cruvinel-Cabral et al., 2018; Gallardo-Fuentes et al., 2016; Haynes, Bishop, Antrobus, & Brazier, 2018; Rogers et al., 2018; Stanton, Wintour, & Kean, 2017).

The gold standard to measure the vertical jump is using the force platform (Aladro-Gonzalvo, Esparza, Moreno, &López, 2017). According to Linthorne (2001), three methods can be used to measure the jump height which includes flight time, impulse- momentum and the work-energy. However, the mentioned measurement may be not an option to the sport or physical activity practitioners because of the assessment is expensive, limited access, require expertise to handle the laboratory assessment and not mobile to field based setting assessment.

Lately, few smartphone application (such as MyJump and MyJump 2) has attracted interest of many researchers to investigate the smartphone application towards jump height measurement. MyJump is a paid application that can be found in iPhone Operating System (iOS) App Store or Android Google Play Store. They have found that the application to be valid and reliable to measure the jump height (Balsalobre-Fernandez et al., 2015; Cruvinel-Cabral et al., 2018; Gallardo-Fuentes et al., 2016; Haynes et al., 2018; Rogers et al., 2018) however, the investigation is limited to iOS. To measure the VJ height, MyJump application need to access the smartphone camera or photo gallery and calculate the VJ height based on the frame by frame analysis. My Jump estimates the jump height, flight time, velocity, force and power of through frame by frame video by selecting the take-off and landing of the jumps using the Samozino's method (Balsalobre- Fernandez, Glaister, &Lockey, 2015).

Previous studies also have demonstrated high validity and reliability of VJ height with force platform, Vertec, contact mat and the Iphone application (MyJump) (Balsalobre-Fernandez, Glaister, &Lockey, 2015; Cruvinel-Cabral et al., 2018; Rogers et al., 2018; Yingling et al., 2018).

On the other hand, Jumpster is an android smartphone application installed from Google Play Store developed to measure the VJ height. The application is free, convenient and practical alternative compared to other measurement tool of vertical jump test. It also will give instant result of the VJ performance after landing. In contrast with MyJump application, Jumpster works based on built in sensors where there are still lack of investigation on VJ performance have been done before using smartphone accelerometer sensor. Therefore, the aim of the present study, is to investigate the criterion validity of Jumpster smartphone application for measuring the VJ height.

In order for MyJump application to measure the VJ height, it need to access the smartphone camera video recording or photo gallery compared to Jumpster which works based on built in sensors. According to del Rosario, Redmond, and Lovell (2015), nearly all latest smartphone has built in high technology sensors that measure motion and orientation where it capable to provide data of three dimensional device movement or positioning. MyJump also is a paid application that required online or bank card payment method that is inconvenience towards some population. Furthermore, MyJump application is not available in Malaysia. Majority of previous study also investigate VJ test on iPhone Operating System (iOS) compared to android based smartphone which are still lacking.

Although laboratory test such as motion capture, force platform and Vertec shows a greater validity and reliability, it has their own practical issues such as expensive, ease of use, instant feedback and transportation issue (Mahmoud, Othman, Abdelrasoul, Stergiou, & Katz, 2015). The use force platform is still conventional and convenience in physical education and sport settings (Yingling et al., 2018). However, it is expensive, non-mobile device and not practicable to some population while the convenience of smartphone where most individual own it might utilize in the use of the device.

Objective of the Study:

To investigate the criterion validity of android smartphone application (Jumpster) for measuring VJ height.

Participants:

30 physically active males from Reserve Officer Training Unit (ROTU) of University Malaysia Sarawak (UNIMAS) and 18 physically active males from Auxiliary Police Unit of University Teknologi Mara (UiTM) Sarawak with a total of 48 participants has been recruited in this study. A simple random sampling technique has been utilized to select the participants. Written informed consent was acquired from each participant before the test are implemented. The following was the inclusion and exclusion criteria of participants for this study:

Inclusion Criteria:

a) Age range: 20 - 29 years' old
b) Healthy and physically active male that recruited were based on self-report International Physical Activity Questionnaire (IPAQ). IPAQ has been reported as excellent test–retest reliability over 7 days for activity level of individual (Silsbury, Goldsmith, & Rushton, 2015)
c) Normal body mass index (BMI) 18.5 – 25.

Exclusion Criteria:

Participants with (a) history of health concerns, (b) disease or physical condition that may affect performance in the study and (c) musculoskeletal injury were excluded from participating in the study.

Instruments:

Force platform

AMTI AccuPower Portable Force Plate (Watertown, MA, USA) was used in this study. The force platform (Figure 3.1) is a square metal plat (762 mm x 1016 mm x 124 mm) with up to 1200 data sets/second and specifically designed for explosive movements. This device connects directly to the computer and the data analysed with AccuPower by Frappier Acceleration version 1.3.4.1 software (Figure 3.2). The force platform has been considered as the 'gold-standard' device to measure VJ performance with high levels of accuracy (Aladro-Gonzalvo, Esparza, Moreno, & Orosia, 2017).

Figure 3.1. Force Platform (AMTI AccuPower Portable Force Plate (Watertown, MA, USA)

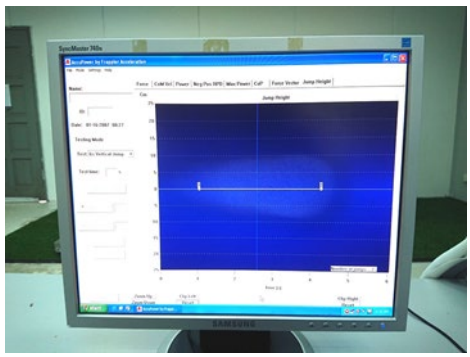

Figure 3.2. AccuPower by Frappier Acceleration Version 1.3.4.1 Software Interface

Jumpster

Jumpster (Figure 3.3) is an android smartphone application developed by Skyhawk Media LLC to measure the VJ height installed from Google Play on Sony Xperia XZ Premium smartphone. The Jumpster is available on the Google Playstore and can be installed for free. The installed android smartphone with Jumpster were then put into a running waist belt (Figure 3.4) and placed at the participants lower back in line with the participants' hip bone to standardize the position of the smartphone.

Figure 3.3. Jumpster Application Interface and Icon on Google Play Store

Figure 3.4: Running Waist Belt

Countermovement Vertical Jump (CMJ) Performance

The CMJ was executed with a short eccentric phase and followed by a concentric action that result in the whole to move upwards (Louder, Bressel, &Bressel, 2015). Participants performed each CMJ with hands on their hips, starting from a static standing position and with their legs straight during the flight phase of the jump. Participants then were instructed to move as fast as possible during the eccentric and concentric action and jump as high as possible before take-off (Figure 3.5).

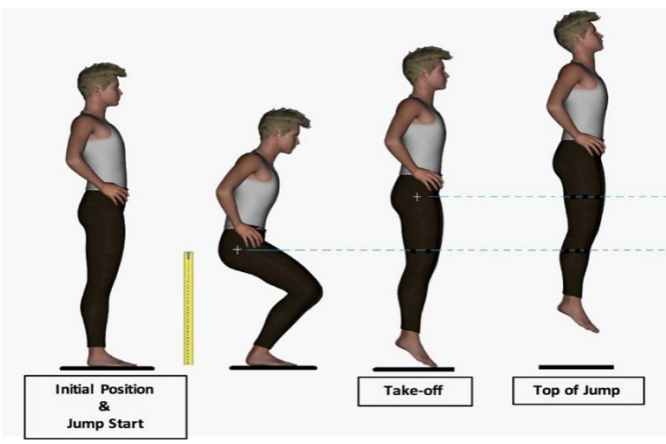

Figure 3.5. Sequence of Countermovement Vertical Jump Action (Adapted from Jiménez-Reyes et al 2017)

Data Collection Procedures

Prior to the test, participants were asking to avoid participating or play any sport, exercise or any moderate to high intensity of activity. No restriction of meal or specific diet were instructed by the participants before the test.

All participants were briefly informed with the purpose of the study, test procedure, risks and benefits of the study upon arrival. Participants also fill-in International Physical Activity Questionnaire (IPAQ) and signing the informed consent prior of the test. Height and body mass are then measured with stadiometer and a calibrated scale.

After demonstration and familiarization with the test procedure, the participants perform a 5 minutes of warm-up consist of jogging, lower body dynamic stretches and vertical jumps (Balsalobre-Fernandez, Glaister, & Lockey, 2015). The participants were allowed to perform CMJ before the test but not on the force platform and not more than 3 jumps.

Each participant performed 3 CMJ on a force platform simultaneously recorded with Jumpster application that placed on waist with running waist belt. Participants start with an upright standing position and perform a rapid countermovement by quickly descending into a squat followed by maximal jump. Throughout the movement, the participants were asked to kept their arm on the hip to avoid the aid of the arm swing. Each jump was separated with a 2 minutes' passive rest period (Gallardo-Fuentes et al., 2016). The mean score of the 3 trials recorded by the Jumpster and force platform was used in the data analysis.

Statistical Analysis

All tests have been carried out using SPSS v.25 for Mac. The descriptive statistics computed to characterize participant's demographic information. Pearson correlation coefficient (r) were used to ascertain the strength of the relationships and criterion validity between Jumpster android application and force platform.

All participants were successfully performed all of the test trial. A total of 144 jumps were recorded and analysed. Descriptive statistics were used to report participant and jump characteristics. The mean score of the 3 trials recorded by the device was used in the data analysis (Table 4.1). The mean VJ height for Jumpster was 36.79 ± 6.93 cm while for the force platform was 22.01 ± 4.66 cm.

Table 4.1: Demographic Profile of Participants (n = 48)

Variable	Mean ± SD
Age (years)	24.33 ± 2.44
Weight (kg)	66.25 ± 4.43
Height (cm)	1.75 ± 1.68
Body mass index (kg/m^2)	23.52 ± 2.05
Jumpster (cm)	36.79 ± 6.93
Force Platform (cm)	22.01 ± 4.66

A Pearson correlation coefficient test was performed to assess the correlation of VJ height between Jumpster and force platform. There was a positive correlation between the two variables, r = 0.863, n = 48, p = < 0.001. A scatterplot in Figure 4.1 summarizes the positive linear relationship between Jumpster and force platform. Score from ±0.4 to ±0.6 are considered as strong, while values above > ±0.7 are considered as strong and ±1 is perfect score. Overall, there was a strong, positive correlation between Jumpster and force platform.

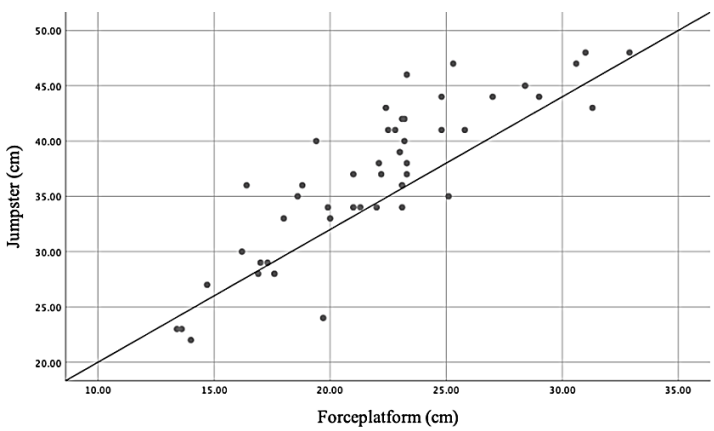

Figure 4.1. Scatter plot of Jumpster by force platform

Discussion:

The present study aims to investigate the criterion validity of the Jumpster for measuring the VJ height compared with a laboratory force platform. The findings showed a strong and significantly correlated measures between the test device (r = 0.863). Therefore, Jumpster android smartphone application had shown a good criterion validity for measuring vertical jump height.

This is consistent with previous findings by Brooks, Benson, & Bruce (2018) on 26 healthy and recreationally active adults (23.2 ± 3.5 years) evaluating the validity between VERT (accelerometer based device) showed an almost perfect correlation with the force platform (r = 0.95). The relationship of VERT also shown by Borges, et al. (2017) compared to VERTEC on U18 Brazillian National volleyball team (17.8 ± 1.1 years) indicated a very large correlation in jump and reach (r = 0.75, p = 0.01). Casartelli, Müller, &Maffiuletti (2010) also have previously shown similar high validity of accelerometer device (Myotest) using two calculation methods which is flight time (ICCs > 0.98) and vertical takeoff velocity (ICCs <0.75) compared to Optojump.

There were very little studies that validate the use of smartphone accelerometer towards jumping performance, specifically the Jumpster android smartphone application against a force platform for VJ height performance. Yet, results of the current study along with the previous research suggest that the smartphone accelerometer is capable in measuring the VJ height through the Jumpster application. The strength of the correlation indicates that coaches and strength and conditioning practitioner can benefit and utilize the Jumpster in lower body improvement and performance.

The main limitation of the methodology used by Jumpster to measure VJ height might be the best position of the smartphone to place on the participant's body part. Pires et al. (2015) state that to avoid unrelated movement or noise toward the smartphone accelerometer, smartphone need to be placed on the body part and waist are best position because it is near to the body centre of mass (Dai et al., 2010). However, the explosive movement of CMJ may affect the smartphone accelerometer and possibly influence the score reading to be higher than the force platform. Since the smartphone sensor is sensitive toward orientation changes or associated movements (Knight et al., 2007), it may possibly detect the early phase of the jumping which is during the eccentric or descending motion before take-off. This might be the reason of the overestimation score of VJ height in Jumpster application. This varies also likely caused by the methodology of the measurement that are based on flight time and the accuracy to capture the initial foot take-off from ground in the force platform case (Buckthorpe, Morris, &Folland, 2012) while Jumpster are based on the build-in accelerometer sensor that detect motion or sense an amount of acceleration toward them (Coskun, Incel, &Ozgovde, 2015).

Although Jumpster and force platform have a difference in VJ height score, the outcome of the score shows a consistency in getting the results between the two method. When Jumpster VJ height performance shows a high score, the value obtain on the force platform also shows a high score. Conversely, when Jumpster VJ height performance shows a low score, the value obtain on the force platform also shows a low score. These values are similar to those previously reported comparing the VJ height performance with the force platform which showed high correlation between methods even though the values showed a significant different between method. Cheah et al. (2017) report a significant positive correlation between force platform and Vertec (r = 0.82, p < 0.01) with significant differences between the method of 19 ± 2.6 cm (p < 0.01). Whereas in another report by Buckthorpe et al.

(2015) reported almost perfect significant correlation between contact mat and force platform ($r = 0.979$, $p < 0.05$) with significant differences between the method was -11.7 ± 6.4 cm. These findings suggest that the results of the current study could be used to measure the VJ height performance with Jumpster application.

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The Current Situation of Vietnamese Students Participating in E-sport – Case Study on the Area of Vietnam National University Ho Chi Minh City

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1. Introduction:

In Vietnam, E-sport has strongly developed over the past few years, especially after certain successes at AIG 3– Asian Indoor Game 3. E-sport has been officially recognized and noticed by the government. Professional games like Legend, Starboba, … have developed more and more drastically which then leads to a gradual improvement in gamers' income. In the area of Vietnam National University, HCMC, there are currently 6 universities under its control, which are University of Technology, University of Natural Science, University of Social Science – Humanity, International University, University of Information Technology, University of Economics – Law and other universities as well. Leisure sport here has developed into various and diverse types, especially E-sport owing to a lot of places surrounding the universities suitable for this type on a large scale, and also these places have already attracted a large number of young people of which the largest force is students. Therefore, studying the current situation of e-sport participation is of great significance in the development of e-sport in a healthy way as well as to fully mitigate negative problems in a timely way in this area. Therefore, the research **"THE CURRENT SITUATION OF VIETNAMESE STUDENTS PARTICIPATING IN E-SPORT – CASE STUDY ON THE AREA OF VIETNAM NATIONAL UNIVERSITY HO CHI MINH CITY"** is very practical and necessary to provide objective and scientific basis in contribution to the more effective development of e-sport in Vietnam in the future.

2. Research Results:

2.1 General information of the sample

The number of questionnaires delivered is 1000, and we received 850 out of 1000 questionnaires, accounting for 85%. Based on these 850 questionnaires, we obtained some general information of students taking part in e-sport, as follows: The majority of student-gamers are: male students (76.8%). As for their current year: freshmen are those who participate in e-sport most (32.7%), the second is seniors (23.4%), the remaining are juniors (22.4%), sophomores (21.5%). With respect to universities: University of Sport Ho Chi Minh City has the largest number of student-gamers (23.1%), the smallest number belongs to University of Economics-Law (10.6%). As for current residence: the majority live in boarding-houses (41.1%). Regarding monthly expense: the majority is "2-3VND million/month" (34%), the minority is "lower than 2 VND million/month" (8.5%).

2.2 E-games played by students

The most popular e-game is League Legends (46.9%), the second is FIFA (33.8%), the least popular one is Need for Speed (0.7%).

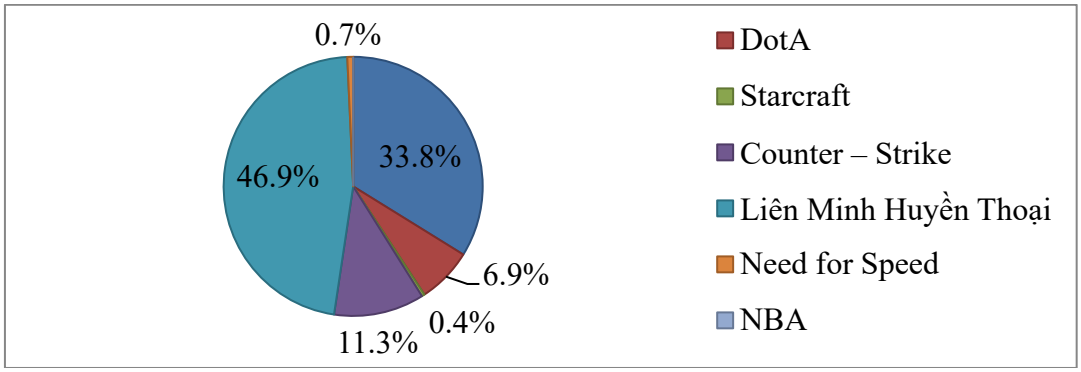

Figure 2.2. E-games Played by Students

2.3 The frequency of E-sport participation of students

The frequency of "4 times/week" constitutes the largest percentage (48.4%), and the lowest constitution is for "once/week" (2.5%).

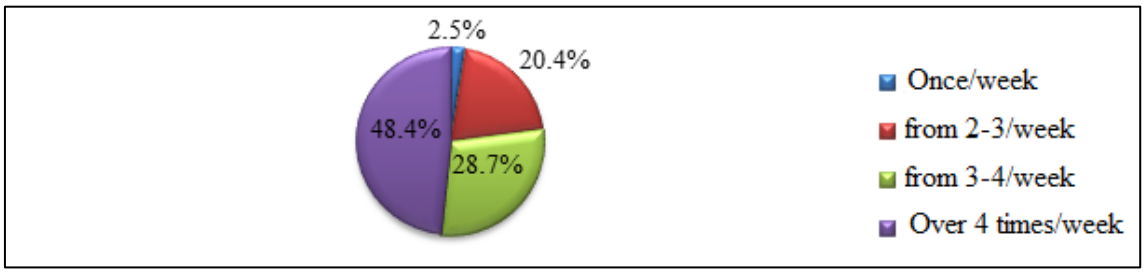

Figure 2.3 The Frequency of E-sport Participation of Students

2.4 Time spent for each time participating in E-sport

"90-120 minutes" accounts for the largest part (37.1%), the second is "over 120 minutes" (33.8%), next is "60-90 minutes" (20.7%), and the remaining is "60 minutes" (8.4 %).

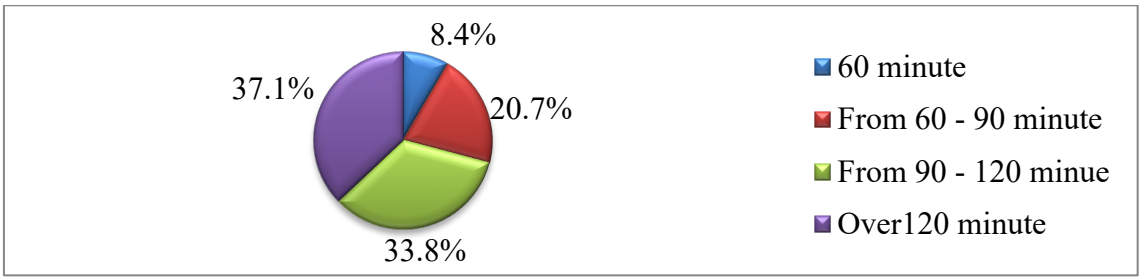

Figure 2.6 Time Spent for Each Time Participating in E-sport

2.5 Expenses for each time participating in E-sport

For each time participating in E-sport, most students spend less than 30000 VND (67.6%), "30000-50000 VND" comes second (24.4%), the lowest percentage is for "over 100000VND" (1.5%). Details are shown in the figure below.

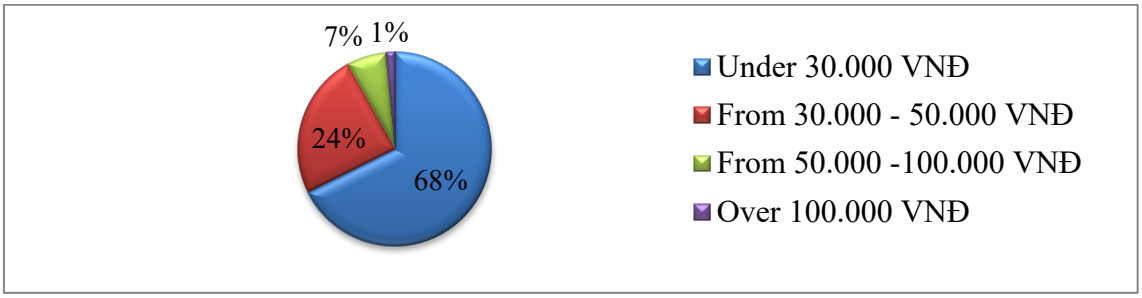

Figure 2.7 Expenses for Each Time Participating in E-sport

2.6 Locations for E-sport participation

The majority of students spends time for E-sport at internet service locations (55%), the remaining students practicing at home account for 39% and at school constitutes 6%. Details are shown in the figure below.

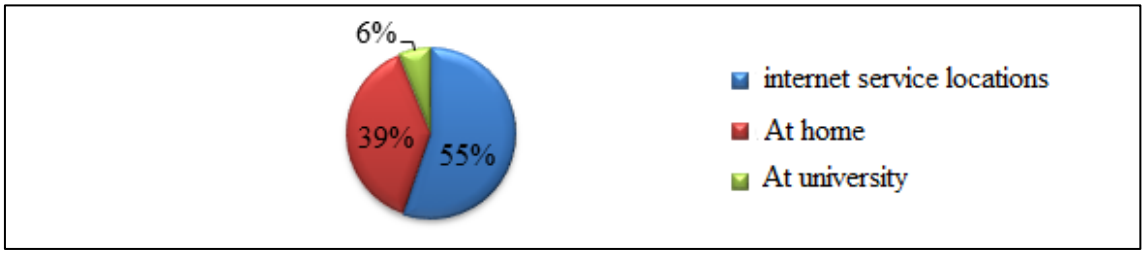

Figure 2.8 Locations for E-sport Participation

2.7 Students' motives for e-sport participation

By computing the mean values of each group of motives, we evaluate the degrees of importance of the groups of motives. Results show that "self-assertion" has the highest mean value (3.9), "entertainment" comes next with the mean value of 3.48, the third highest mean value is of "thrill-seeking" (3.25), "to be respected" comes fourth (3.1), the fifth one is "awareness" (3.05), and the last is "social network expansion" with the mean value of 3.00.

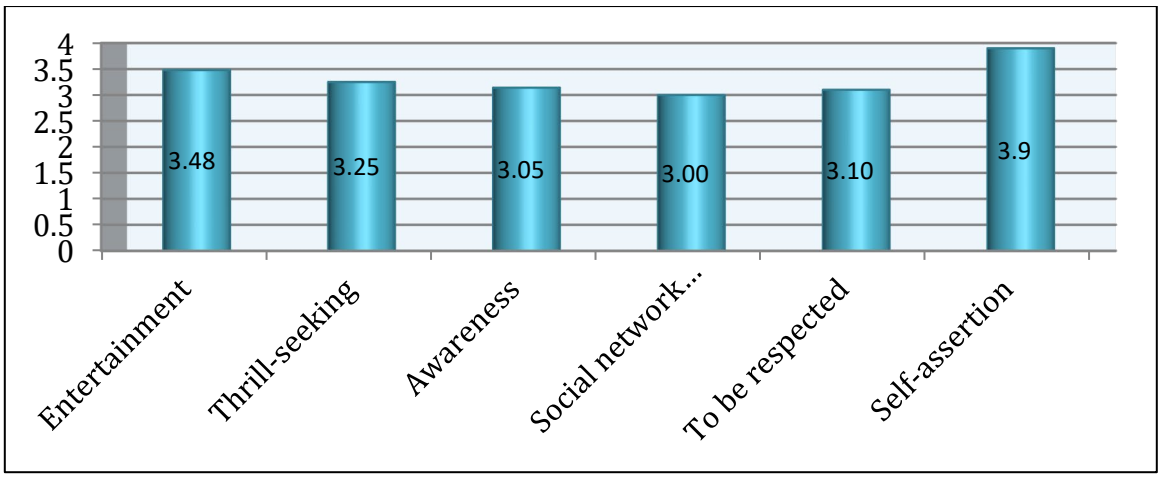

Figure 2.9. Comparison of the Degrees of Importance of the Groups of Motives

2.8 Difficulties/challenges when participating in E-sport

By computing the mean values of each group of motives, we evaluate the degrees of importance of the groups of factors. Results show that the "subjective" group of difficulties has the highest degree of importance (3.9), "objective" comes second (3.87), and the last one is "E-sport structure" (3.45).

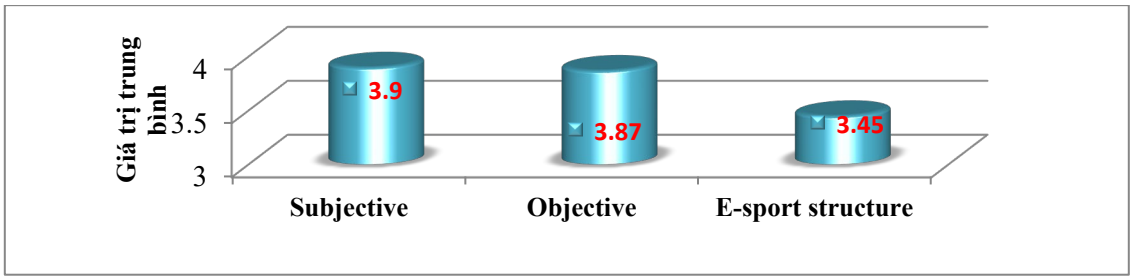

Figure 2.10. Comparison of the degrees of importance of the groups of difficulties/challenges

3. Conclusion:

Through survey, we have found the information about the current situation of Vietnamese students participating in E-sport – case study of the area of Vietnam National University Ho Chi Minh City as follows: Regarding time for E-sport participation: the majority of student-gamers has get involved in this type for more than 12 months. The most popular e-games are League Legend and FIFA. As for the frequencies of E-sport participation, "4 times per week" accounts for the largest percentage. The time for practicing E-sport is from 6pm – 12am. Time spent for each time participating in E-sport is mostly around 90-120 minutes and over 120 minutes. As for expenses for each time participating in E-sport, the majority of student-gamers spend less than 30000 VND and the cost of more than 100000VND takes the smallest constitution. With respect to locations, the majority of student-gamers choose internet service locations for their e-sport practice.

As for students' motives for E-sport participation, the research has found 6 groups of motives. Among these, the one that has the largest impact is "self-assertion", the one with the least impact is "social network expansion". In studying students' difficulties/challenges during their time of E-sport participation, there are three different groups. Among these, the "subjective" group is the one with the highest degree of importance, and the one with the lowest degree of importance is "E-sport structure".

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Brief Analytical Study about Impact of Various Strength Preparing on the Static and Dynamic Equilibrium Capacity of Volleyball Players

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Abstract:

The point of this investigation is to look at the impact of various strength preparing on the static and dynamic equilibrium capacity of volleyball players. An aggregate of 20 male volleyball players, matured somewhere in the range of 18 and 25, are taken an interest in the examination who has been playing in national volleyball competition in India. The subjects were isolated into two gatherings as indicated by the randomized technique as trial gathering (n=10, age:21.60±2.06) and control gathering (n=10, age:20.50±1.77). The test bunch was invigorated an alternate preparing program for 3 days per week for about two months. The two gatherings proceeded with their standard volleyball training. Leg strength, static and dynamic equilibrium estimations were made prior to beginning the distinctive strength preparing in the two gatherings and after the preparation was done. Takei Leg Dynamometer utilized for leg strength estimation and Biodex Balance SD Isokinetic Balance Test for balance estimation. Matched Sample t test was utilized for intra-bunch examinations and Independent Sample t test was utilized for factual investigation of the information. At the point when the pre-test and post-test estimations of the trial bunch were looked at, there were huge contrasts in leg strength, static (Double leg-Overall Postural Stability Index (OPSI), Right Leg-OPSI, Left Leg-OPSI) and dynamic (Right Leg-Overall Stability Index (OSI), Left Leg-OSI) balance scores ($p<0.05$). The benchmark group demonstrated critical essentialness in the Double leg-OPSI score ($p<0.05$). No other hugeness was found in the other information ($p>0.05$). Therefore, it is viewed as that the diverse strength preparing applied to the volleyball players positively affects the static and dynamic equilibrium capacity. It tends to be said that static and dynamic equilibrium capacities of ordinary strength preparing may increment.

Keywords: strength training, balance, volleyball

1. Introduction:

The principle point of all games branches is to build up the actual qualities needed for that sport in a persistent concordance and to improve the presentation of the athletes. Equilibrium can be characterized as the capacity to hold the beginning of the body. Keeping up equilibrium is the premise of the mind-boggling communication among visual capacities and coordination of developments with muscle action (Emery, 2003; Horak, 1987). There are fundamentally two sorts of equilibrium, static and dynamic. Static dependability, stable state implies assurance. Dynamic equilibrium is to keep up equilibrium while moving. Equilibrium control is a principal prerequisite for sports, day by day exercises and sports (Anderson and Behm, 2005). The competitors' equilibrium capacities in various games branches achieve various difficulties in biomedical skill. Therefore, the equilibrium test gets important to decide how these competitors act yet to be determined test (Bressel, 2007). The volleyball

branch is a group activity including complex developments and requiring continually moving and flexible aptitudes. Thusly, significant actual highlights, for example, balance, perseverance, response speed, hazardous power, and brisk power are arising as attributes that ought to be found in volleyball players (Wulf, 2007; Siedentop, 2011). The component that gives the introduction of numerous physical or playful developments, and halting, altering course, moving, moving athletic gear, and having a consistent body position is balance. Proprioceptive faculties additionally assume a significant job in the support and insurance of the body's equilibrium. Proprioception is a unique sense including feeling of joint movement and sensation of joint position (Lephart, 1997). The component that gives the introduction of numerous physical or playful developments, and halting, altering course, moving, moving athletic gear, and having a steady body position is balance. In the light of this data, it was wanted to explore the impact of various strength trainings on the static and dynamic equilibrium capacity of volleyball major parts in this investigation. Considering the impact of solidarity and equilibrium improvement on the playful exhibition, changes in leg strength, and static and dynamic equilibrium scores after various strength preparing in volleyball players were resolved and it is planned to have the option to make proposals for athlete, mentor and sports science.

2. Method:

2.1. Subjects

A total of 20 male volleyball players between the ages of 18 and 25 participated in the national competition in India as volunteers. Subjects were randomly divided into two groups as experimental group (n = 10, age: 21.60 ± 2.06) and control group (n = 10, age: 20.50 ± 1.77). The experimental group was given a different strength training program for 3 days a week for 8 weeks. Both groups continued their regular volleyball training.

Research Protocol:

In order to reveal the anthropometric properties of individuals; age, body weight, height and body mass index (BMI) were measured. Leg strength in individuals was measured with the Takei Leg Dynamometer and static and dynamic balance scores with the Biodex Balance SD Isokinetic Balance Test. Before the experiment and control group started to work on different strengths and after finishing the work, static (Double legOverall Postural Stability Index (OPSI), Right Leg-OPSI, Left Leg-OPSI) and dynamic (Right Leg-Overall Stability Index (OSI), Left Leg-OSI) balance scores and leg strength were measured. Measurements were made in Physiology Laboratory of Gaziantep University Physical Education and Sports High School.

2.2. Strength Training Model

As a method of strength training, Core Training, leg curl, leg extensions, squat, plyometric bounce, single leg lunge,split squat jump, deadlift, double leg bound movements were applied in unit training. Bench press and shoulder press exercises were used as auxiliary muscles. In the Core Trainer, Russian Twist and Side Plank exercises wereperformed.

Standard weights of 2,5 - 5 - 7,5 - 10 - 12,5 - 15 - 20 - 25 kg are used for bench press, shoulder press, leg curl, leg extensions and squat measurement. The maximal forces of the subjects were determined by the one-repetition max (1 RM). The volleyball players in the experimental group were subjected to different strength training sessions on the 1st and 3rd

day of the week, with 3 sets of 8 repetitions (maximal strength training) and 3 sets of 20 repetitions (strength endurance training). In the Core training, Russian Twist and Side Plank movements were applied to 15 sets of 1st and 3rd day and 15 sets of 3rd set and 25 sets of 3 sets of 2nd day. The strength training applied to the experimental group lasted for an average of 30 minutes and the athletes were given a warm-up period of 10-15 minutes before thetraining.

2.3. Anthropometric Measurements

Anthropometric measurements of the subjects joined to the study were measured before exercise tests. Body weight and height were determined by using the tool with N.A.N brand. Subjects' body mass indexes (BMI) were calculated. BMI measurements were calculated by dividing the body length of the body in meters of length.

2.4. Balance Test

Balance tests were performed using the Biodex Balance System (Biodex Balance System, BBS; Biodex Inc., Shirley, NY), which can accurately reflect the balance performance.

Static Test: Performed on right leg, left leg and posture positions on Double leg respectively. At the fixed point on the screen from the test during the static test; it is desirable to keep it stable by trying to maintain the balance to the front, back, right, left. The tests were repeated 3 times with a duration of 20 seconds and a rest interval of 10 seconds and scores were recorded.

Dynamic Test: In our work, the dynamic test was performed on the right and left leg positions, respectively. Level 4 dynamic balance test was used in this study. The tests were repeated 3 times with a duration of 20 seconds and a rest interval of 10 seconds and scores were recorded.

2.5. Leg Strength Test

In our study, leg strength measurements were made using the Takei Leg Dynamometer. After the subjects had placed their legs bent over the dynamometer stand, the dynamometer held by their hands with their backs straight and tilted forward with their arms straight and taut, pulled all the power from their legs in the vertical position. The same procedure was repeated 3 times and the highest score was recorded.

2.6. Data Analysis

Statistical analyzes of this study were performed using the SPSS statistical program (SPSS for Windows, version 20.0, SPSS Inc. Chicago, Illinois, USA). The Shapiro-Wilk test was performed to determine whether the data were normally distributed and homogeneous before proceeding to statistical procedures. The Independent Samples T Test was used to assess the significance between the experimental and control groups. Paired Samples T Test was run for intra-group comparisons. Statistical results were evaluated at 95% confidence interval and $p < 0.05$ significance level.

3. Results:

Table 1. Experiment and Control Group Age, Height, Weight and BMI Average

Variable	Experimental Group Mean ± SD	Control Group Mean ± SD
Age (years)	21.60 ± 2.06	20.50 ± 1.77
Height (cm)	181.90 ± 5.23	180.80 ± 2.25
Weight (kg)	72.49 ± 2.16	74.30 ± 2.18
BMI (kg/m^2)	21.93 ± 0.99	22.73 ± 0.80

In Table 1, presents the supplementary statistical information of the groups. The average age of the experimental group was 21.60 ± 2.06 years and the average age of the control group was 20.50 ± 1.77 years. Body weight was measured as 72.49 ± 2.16 kg for the experimental group and 74.30 ± 2.18 kg for the control group. The height of th e experimental group was measured as 181.90 ± 5.23 cm while that of the control group was measured as 180.80 ± 2.25 cm. BMI values were found to be 21.93 ± 0.99 kg /m^2 in the experimental group and 22.73 ± 0.80 kg / m^2 in the control group.

Table 2. Analysis of Pre and Post Test Static and Dynamic Balance Scores of Experimental Group

Variable	Pre Test Mean ± SD	Post Test Mean ± SD	df	t	p
Leg Strength	130.60 ± 11.86	132.70 ± 11.38	9	-4.523	**0.001***
Double leg-OPSI	0.44 ± 0.14	0.34 ± 0.10	9	4.743	**0.001***
Right Leg-OPSI	0.83 ± 0.13	0.77 ± 0.16	9	2.714	**0.024***
Left Leg-OPSI	0.92 ± 0.21	0.62 ± 0.13	9	4.108	**0.003***
Right Leg-OSI	0.92 ± 0.24	0.67 ± 0.16	9	3.273	**0.010***
Left Leg-OSI	0.87 ± 0.09	0.75 ± 0.09	9	4.811	**0.001***

*($p<0.05$) (OPSI: Overall Postural Stability Index), (OSI: Overall Stability Index)

In Table 2, comparison of the pre-test and post-test measurement results for the parameters given after the different strength training program applied to the experimental group were shown. The leg strength, static and dynamic balance scores of the experimental group were significant ($p <0.05$).

Table 3. Analysis of Static and Dynamic Balance Scores of The Control Group

Variable	Pre Test Mean ± SD	Post Test Mean ± SD	df	t	p
Leg Strength	130.46 ± 5.98	131.90 ± 5,34	9	-1.881	0.093
Double leg-OPSI	0.40 ± 0.14	0.34 ± 0.11	9	3.674	**0.005***
Right Leg-OPSI	0.84 ± 011	0.82 ± 0.13	9	0.802	0.443
Left Leg-OPSI	0.96 ± 0.12	0.95 ± 0.17	9	0.287	0.780
Right Leg-OSI	0.95 ± 0.17	0.89 ± 0.15	9	1.765	0.111
Left Leg-OSI	0.92 ± 0.09	0.89 ± 0.11	9	1.152	0.279

*(p<0.05) (OPSI: Overall Postural Stability Index), (OSI: Overall Stability Index)

In Table 3, comparison of pre-test and post-test measurement results for the parameters given after the different strength training program applied to the control group were shown. Significance was found in the double leg-OPSI scores of the control group (p <0.05). No other significance was found in the other data (p> 0.05).

Table 4. Comparison of Experimental and Control Groups

Variable	Experimental Group Difference Mean ± SD	Control Group Difference Mean ± SD	df	t	p
Leg Strength	-2.10 ± 1.46	-1.44 ± 2.42	18	-0.737	0.471
Double leg-OPSI	0.10 ± 0 .06	0.06 ± 0 .05	18	1.500	0.151
Right Leg-OPSI	0.06 ± 0 .06	0.02 ± 0 .07	18	1.200	0.246
Left Leg-OPSI	0.30 ± 0 .23	0.01 ± 0 .11	18	3.585	**0.002***
Right Leg-OSI	0.25 ± 0 .24	0.06 ± 0 .10	18	2.273	**0.036***
Left Leg-OSI	0.12 ± 0 .07	0.03 ± 0 .08	18	2.496	**0.022***

*(p<0.05) (OPSI: Overall Postural Stability Index), (OSI: Overall Stability Index)

In Table 4, there was significant difference between the groups in the Left Leg-OPSI, Right Leg-OSI, Left Leg-OSI in favor of the experimental group (p <0.05). Leg strength, Double leg-OPSI, Right Leg-OPSI didn't show any significance (p>0.05).

4. Discussion:

4.1. Static Balance Test

Following two months of various strength preparing applied in our examination, a huge distinction was found in the scores of Double leg-OPSI, Right Leg-OPSI, Left Leg-OPSI in the test gathering, and Double leg-OPSI in the benchmark group (p<0.05). There was no huge contrast between Right Leg-OPSI and Left Leg-OPSI scores of the benchmark group (p>0.05). In the examination of the gatherings, measurably huge distinction was found in the Left Leg-OPSI for the test gathering (Table 4). Equilibrium is one of the primary components of most proactive tasks and a significant factor in the presentation of athletic abilities. Punakallio characterized the static equilibrium as the capacity to hold the press in the help place in the center (Abbasi et al., 2012). The overall equilibrium information is significant when volleyball players jump and fall during preparing or match. Tamara et al. discovered static equilibrium esteems to be huge contrasted with the benchmark group following a month and a half of preparing program on female b-ball players (Tamara, 2009). Holm et al have not discovered any huge distinction in the static equilibrium scores after an inability preventive exercise program on a handball gathering of 35 individuals (Holm et al., 2004). In an examination on youthful ball players, it was resolved that there was a distinction the positive way after pre-test and post-test on the equilibrium capacities after the plyometric preparing (Arazi and Asadi, 2011). The discoveries in our investigation indicating that there was a positive reduction in the scores Double leg-OPSI, Right Leg-OPSI and Left Leg-OPSI for the test bunch after the diverse strength preparing program applied to volleyball players underpins the writing.

4.2. Dynamic Balance Test

A critical distinction was found in the Right Leg-OSI and Left Leg-OSI scores in the exploratory gathering following two months of various strength preparing applied in our examination ($p<0.05$), however any huge affiliation was not discovered when the boundaries of the benchmark group were investigated ($p>0.05$). In the correlation of the gatherings, a genuinely critical contrast was found in the Right Leg-OSI, Left Leg-OSI scores for the exploratory gathering (Table 4). The vast majority of the every day exercises are performed powerfully, so unique equilibrium is critical in the acknowledgment of proactive tasks and athletic abilities (Abbasi et al., 2012). Mattacola and Lloyd (1997) led preparing on protection from lower leg and dynamic equilibrium in an activity. Members got both equilibrium and power preparing. have discovered that force preparing is successful to keep up the equilibrium estimated by the Single Plane Balance Board (Mattacola and Lloyd, 1997). In an investigation on competitors, a 8-week balance practice brought about an expansion in lower limit muscle strength and equilibrium capacity (Siriphorn, 2015). Kahle (2009) found that center muscle soundness preparing can improve dynamic postural control in an investigation of the impacts of 6-week center muscle steadiness preparing (Kahle, 2009). It is believed that the critical contrast in the dynamic equilibrium scores of the Right Leg-OSI and Left Leg-OSI of the exploratory gathering in powerful equilibrium estimations in our examination was because of the strength preparing of the players along with volleyball preparing. It tends to be said that the expansions in equilibrium and leg qualities are brought about by the activities acted in volleyball trainings in which the predominant and non-prevailing feet are similarly utilized.

4.3. Leg Strength

A critical increment was found in the leg strength estimations of the trial bunch following two months of various strength trainings in our investigation ($p<0.05$). The expansion in the benchmark group was not found measurably huge ($p>0.05$). There was no huge contrast in the correlation of the gatherings. In an examination where the impacts of Tai Chi Softball (TCSB) practices on body elements of old people were analyzed, TCSB practice was discovered to be powerful on actual properties like leg strength, dynamic equilibrium, portability, fine engine capacity and control, hand and lower arm muscle strength, paw strength and shoulder versatility (Lin et al., 2017). In another investigation directed on judoists, huge contrasts were found in leg strength esteems (Karakoc, 2016). In the investigation performed by Perez-Turpin et al., jump execution and greatest leg strength of very much prepared volleyball and sea shore volleyball players were seen to improve fundamentally because of 6-week Whole Body Vibration (WBV) work out, ie entire body vibration power work out, when contrasted with ordinary preparing alone (Perez-Turpin et al., 2014). In the writing, the overall conviction is that leg strength esteems increment after strength preparing. Our discoveries of leg strength esteems after various strength trainings in the exploratory and control bunches in our investigation uphold the writing. It very well may be said that 8-week distinctive strength trainings altogether influenced the leg strength estimations of the volleyball players.

Conclusion:

Thus; it very well may be said that the diverse strength trainings applied to volleyball players influenced the static and dynamic equilibrium scores decidedly. It very well may be found that expanded static and dynamic equilibrium capacities of players performing strength

trainings is because of expansion in working limits of intermuscular and intramuscular muscle bunches because of expansion in muscle strength. For the advancement of execution and equilibrium in volleyball, it very well may be recommended that the strength practices are given impressive spot in the preparation time frame and distinctive strength practice programs are created.

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Selecting Criteria to Evaluate the Pedagogical Capacity for Karate Students in the Sports Training Department of Bac Ninh Sports University

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Summary:

Using the methods of materials reference, pedagogical observations, interviews, pedagogical examination and mathematical statistics to select criteria to evaluate the pedagogical capacity for Karate students in the Sports Training department of Bac Ninh Sports University; as a basis to enhance the effectiveness of teaching and learning Martial Arts - Boxing , as well as the quality of education in school today.

Keywords: Selecting, criteria, evaluate, pedagogical capacity, students, Karate, Sports Training department, Bac Ninh Sports University.

Article Source:

Excerpt from base-level science and technology project in 2018-2019 : **"Research solutions to improve pedagogical capacity for Karate students in the Sports Training department of Bac Ninh Sports University".**

1. Question:

Over the years, the requirements of higher education innovation has had a strong impact on universities across the country. Therefore, physical education officials training schools in our country have made great efforts in developing the number and raising the professional levels of the physical education teachers. Therefore, improving the pedagogical capacity for students is one of the central and urgent tasks of scientific and practical significance for the development of the University.

Testing and assessing pedagogical capacity for students is significantly important in the training process of schools. In this regard, there have been many domestic and international researchers such as Pham Minh Hac, Dong Van Trieu, Kieu Tat Vinh, Nguyen Van Duc; Nguyen Ngoc Tuan; Nguyen Van Phuc; Bui Minh Thanh; Dong Huong Lan; Le Vuong Anh ... but the research targets of the authors are often heterogeneous because the researchers provide different criteria depending on the purposes. Particularly, the criteria for evaluating the pedagogical capacity for Karate students have not been researched by anyone. Because of the reason above, the development of pedagogical evaluation criteria for Karate students in the Sports Training department of Bac Ninh Sports University is very necessary and must be paid attention to as well as researched.

2. Research Methods:

The research process uses the following methods: method of analyzing and synthesizing documents; method of interview seminars; method of pedagogical examination; method of mathematical statistics.

3. Research Results:

3.1. Selecting pedagogical evaluation criteria for Karate students in the Sports Training department

3.1.1 . Scientific basis of the criteria selection.

In order to select the criteria for evaluating the pedagogical capacityfor Karate students, the research first collected information, combined with the results of reading, analyzing documents and collecting the opinions of 20 experts, physical training and sport educators working at the Sports University, teachers, training center coaches and Karate coaches and defined the principles of selecting the criteria.

Interview results show that 15/20 (75.0%) of responses said that it is very necessary and 5/20 (25.0%) considered it necessary. The number of people who considered it very necessary and necessary want to have specific criteria for Karate students in the Sports Training department, the rest 1/20 (5.0%) considered it unnecessary because they believed that simply using the assessment criteria for students in general issued by the MOET is enough and it is not necessary to develop specialized criteria for specialized subjects which are both expensive and more complicated... The interview results show that there are still some teachers who underestimate or pay attention to developing scientific criteria to evaluate the pedagogical capacity for specialized subjects.

3.1.2. Interview results on criteria for pedagogical capacity evaluation for Karate students in the Sports Training department

Through analyzing and synthesizing documents, 23 criteria for evaluating the pedagogical capacity of Karate students have been collected, including 6 criteria for lesson preparation, 12 criteria for in-class performance, 5 criteria for referee performance. These criteria were interviewed by 20 experts, physical training and sport educators working at the Sports University, Physical Education and Sports training schools, teachers, training center coaches and Karate coaches. Interview results show that out of the 23 criteria selected, the percentage of responses was as follows: 8 criteria reached > 90.0%; 10 criteria reached> 80.0%, 5 criteria reached <60.0%. The interview results on selecting criteria to evaluate the pedagogical capacity for Karate students in the Sports Training department are presented in Table 1.

Based on the results of the interview, to ensure the focus and objectivity, the topic only chose the criteria which have 80% or more of agree votes and has selected 18 criteria which are divided into the following 3 groups:

Lesson preparation with 5 criteria: Demonstrating enoughlesson objectives (tasks), choosing reasonable teaching methods, using teaching tools reasonably, allocating time during lessons, preparing lessons in the required format, and follow the correct teaching process.

In-class performance with 9 criteria: Pedagogical manners in Physical Education and Sports Training - communication ability in class, modeling ability, modeling methods, teaching ability, ability to detect technical errors, methods of correcting technical errors, ability to organize classes, teaching equipment usage, preventing injuries during practice.

Referee performance with 4 criteria: Posture and manner in operating the competition, the implementation of the competition rules, ability to handle situations, ability to determine the severity of the injury.

Table 1. Interview results on pedagogical capacity evaluation criteria for Karate students in the Sports Training department (n = 20)

No.	Content	Interview results	
		Number of agree votes	%
I. Lesson preparation			
1	Demonstratingenough objectives (tasks)	20	100
2	Choose reasonable teaching methods	18	90.0
3	Use teaching tools reasonably	17	85.0
4	Methods of checking and evaluating academic results.	12	60.0
5	Allocate time during class	18	90.0
6	Prepare lessons in the right format and follow the correct teaching process.	20	100
II. In-class performance			
1	Pedagogical manners in Physical Education and Sports Training - communication ability in class	20	100
2	Ability to classify students	12	60.0
3	Modeling ability	20	100
4	Modeling methods	19	95.0
5	Teaching ability	19	95
6	Ability to educate students	11	55.0
7	Ability to detect technical errors	37	92.5
8	Methods of correcting technical errors	18	90.0
9	Ability to handle pedagogical situations	12	60.0
10	Ability to organize classes	18	90.0
11	Teaching equipment usage	17	85.0
12	Prevent injuries during practice	17	85.0

III. Referee performance			
1	Posture and manner in operating competition	20	100
2	Ability to observe the match	11	55.0
3	Implementation of the competition rules	19	95.0
4	Ability to handle situations	17	85.0
5	Ability to determine the severity of the injury	18	90.0

Table 1 shows that: After selecting the criteria for evaluating the pedagogical capacity for students, we built the detailed evaluation content and evaluation methods based on the contents of the criteria.

Detailed content and evaluation method of each criterion.

Lesson Preparation:

Excellent grade (9-10 points)

* Demonstrateenough objectives (tasks)
  The preparation fully presents the basic contents according to the objectives of the lesson and is arranged in a reasonable order.
* Apply professional knowledge in accordance with the objectives of the lesson.
  Master the professional knowledge; Follow the instructions of the textbook and the teacher's guidebook
  Reasonably demonstrate the application of the subject's knowledge based on the requirements of each subject, the levels and objectives of the lesson.
* Choices of teaching methods.
  Choose and apply good teaching methods in accordance with the difficulty of the technical movements, genders, students' levels and available educational facilities.
* Use teaching tools reasonably.
  Use teaching tools at the right time, in the right place and effectively.
* Allocate time during class.
  Logical time division for each part (preparation, basis and end).
  Reasonable time divisionbased on each teaching content such as difficulty, complexity of the technical movements
* Prepare lesson in the right format and follow the correct teaching process of the subject and school.

Good grade (7-8 points)

* Demonstrate enough objectives (tasks).
  The preparation shows all the basic contents according to the lesson objectives, but the arrangement is only relatively reasonable.
* Apply professional knowledge in accordance with the objectives of the lesson.
  Master the professional knowledge; Follow the instructions of the textbook and the teacher's guidebook
  The application of the subject's knowledge based on the requirements of each subject, the levels and objectives of the lesson is relatively reasonable.

* Choices of teaching methods.
  Can choose but the application of teaching methods in accordance with the difficulty of the technical movements, genders, students' levels and available educational facilities is not really effective.
* Use teaching tools reasonably.
  Use teaching tools at the right time and in the right place but the effectiveness is not high.
* Allocate time during class.
  Logical time division for each part (preparation, basis and end).
  Time division based on each teaching content such as difficulty, complexity of the technical movements is not too reasonable.
* Prepare lesson in the right format and follow the correct teaching process of the subject and school, however, there are still some minor mistakes.

Average grade (5-6 points)

* Demonstrate enough objectives (tasks).
  The preparation fully presents the basic contents according to the objectives of the lesson, but the arrangement is not reasonable.
* Apply professional knowledge in accordance with the objectives of the lesson.
  Master the professional knowledge; Follow the instructions of the textbook and the teacher's guidebook.
  The application of the subject's knowledge based on the requirements of each subject, the levels and objectives of the lesson is shown but unreasonable.
* Choices of teaching methods.
  Can choose but the application of teaching methods is not in accordance with the difficulty of the technical movements, genders, students' levels and available educational facilities.
* Use teaching tools reasonably.
  Use teaching tools at the right time and in the right place.
* Allocate time during class.
  Relatively reasonable time division for each part (preparation, basic and end).
  Time division based on each teaching content such as difficulty, complexity of the technical movements is unreasonable.
* Prepare lesson in the right format and follow the correct teaching process of the subject and school, however, there are still many mistakes.

Weak grade (under 5 points)

* Demonstrate enough objectives (tasks).
  The preparation does not show all the basic contents according to the objectives of the lesson and the arrangement is unreasonable.
* Apply professional knowledge in accordance with the objectives of the lesson.
  Have not mastered the professional knowledge; do not follow the instructions of the textbook and the teacher's guidebook.
  Have not yet shown the application of the subject's knowledge based on the requirements of each subject, the levels and objectives of the lesson.
* Choices of teaching methods.

Have not been able to choose teaching methods which are in accordance with the difficulty of the technical movements, genders, students' levels and available educational facilities.

* Use teaching tools reasonably.
  Need to use teaching tools at the right time, in the right place and effectively.
* Allocate time during class.
  Unreasonable time division for each part (preparation, basics, and endings).
  Unreasonable time division based on teaching content such as difficulty, complexity of the technical movements
* Do not prepare lesson in the right format and do not follow the correct teaching process of the subject and school.

In-class Performance:

Excellent grade (9-10 points)

* Pedagogical manners in Physical Education and Sports Training, communication ability in class.
- Clean, nice sportswear, in accordance with regulations.
- Agile, serious, active manner, loud, clear and inspiring voice (count the beat or give commands).
- Use general Vietnamese.
- Demonstrate pedagogical characteristics in communicating with students.
- Use interesting, attractive language that stimulates students' interest in learning
* Modeling ability
- Make an accurate, beautiful and attractive model of amplitude, rhythm and basic postures.
* Modeling methods
- Pay attention to the model angle and speed appropriately.
- The number of models is suitable with the purpose and requirements of each modeling time.
* Teaching ability
- Very suitable witheach target of teaching.
- Very good ability to emphasize key requirements, or key techniques.
- Concise, easy to understand, related to existing practice experience.
* Ability to detect technical errors:
- Very good ability to cover the class, observe students in training to detect technical errors is.
- Very good ability to distinguish basic or minor technical errors, grasp the causes of technical errors.
* Methods of correcting technical errors
- Make good use of verbal or signal reminders, supplementary exercises, and guidance
* Ability to organize classes
- Arrange class strictly, seriously, forming formation and moving the formation reasonably (receiving class, going to class - training formation–watching modeling formation–playing games formation ...),the training ground, the influence of the environment, the optimal angle when watching a model must be taken into consideration ...

- Ability to divide groups to practice and nominate the leader reasonably.
- Gather classes, groups quickly and neatly.
- Use clear, accurate and logical commands in operating the classroom.
- Always cover the class in any situation.

* Teaching equipment usage

- Courts and yards: safe environment.
- Tools: Strike pad, practice mats, bags, ... used very effectively.
- Pictures: Effectively applied.

* Prevent injuries during practice.

- Warm up fully before training.
- Firmly grasp health situation.
- Prepare courts, yards, equipment, training clothes carefully.
- The teacherhave mastered the techniques of movements
- The teacher have masteredprotecting and helping methods.
- Continuously educate students about the awareness of injury prevention in training.

Good grade (7-8 points)

* Pedagogical manners in Physical Education and Sports Training, communication ability in class.

- Clean, nice sportswear, in accordance with regulations.
- Relatively agile, serious, active manner, loud, clear and inspiring voice (count the beat or give commands).
- Use general Vietnamese.
- Demonstrate pedagogical characteristics in communicating with students.
- Can use interesting, attractive language that stimulates students' interest in learning

* Modeling ability

- Relatively good ability in making an accurate, beautiful and attractive model of amplitude, rhythm and basic postures.

* Modeling methods

- Pay attention to the model angle and speed
- The number of models is not really suitable with the purpose and requirements of each modeling time.

* Teaching ability

- Suitable with each target of teaching.
- Ability to emphasize key requirements, or key techniques is not very good
- Concise, easy to understand, but the ability to relate to existing practice experience is not too high.

* Ability to detect technical errors

- Can cover the class, observe students in training to detect technical errors.
- Know the differences between basic technical errors and know the causes of those technical errors.

* Methods of correcting technical errors

- Make good use of verbal or signal reminders.

* Ability to organize classes

- Relatively good ability to organize classes tightly, seriously, forming formation and moving the formation reasonably (receiving class, going to class - training formation –

watching modeling formation – playing games formation ...), yards and courts areas, flatness, sun direction, wind direction, the influence of the environment, the optimal angle when watching a model are taken into consideration ...

- Divide groups to practice, appoint a leader.
- Gather classes, groups quickly and neatly.
- Use clear commands in operating the classroom.

* Teaching equipment usage

- Courts and yards: safe environment.
- Tools: practice mats, armors, strike pads, kick pads, bags...are used but the effectiveness is not high.
- Pictures: Reasonably used.

* Prevent injuries during practice

- Warm up fully before training.
- Relatively good preparation of courts and yards, equipment and training clothes.
- The teacher have mastered the movements' techniques
- The teacher have not masteredprotecting and helping methods.
- Do not continuously educate students about the awareness of injury prevention in training.

Average grade (5-6 points)

* Pedagogical manners in Physical Education and Sports Training, communication ability in class.

- Clean, nice sportswear, in accordance with regulations.
- Manner is not yet agile, serious, active, loud, clear and inspiring voice (count the beat or give commands).
- General Vietnamese usage is not yet correct.
- Demonstrate pedagogical characteristics in communicating with students.
- Have not yet used interesting, attractive language that stimulates students' interest in learning

* Modeling ability

- The model of amplitude, rhythm and basic postures is not yet accurate, beautiful and attractive.

* Modeling methods

- Have not paid attention to the model angle and speed reasonably.
- The number of models was not very suitable with the purpose and requirements of each modeling time.

* Teaching ability

- Suitable with each target of teaching
- There are still limitations in emphasizing key requirements, or key techniques.
- Concise, easy to understand, but is not related to existing practice experience

* Ability to detect technical errors

- The ability to cover the class, observe students in training to detect technical errors is limited.
- Know how to distinguish basic technical errors, but the ability to grasp the causes of these technical errors is not good.

* Methods of correcting technical errors

- Know how to use verbal or signal reminders
* Ability to organize classes
- Organize class strictly, seriously, formally and form formation appropriately (receiving class, going to class - training formation – watching modeling formation – playing games formation ...), but have not taken the area of the practice mats, the influence of the environment, the optimal angle when watching modeling ... into consideration.
- Divide groups to practice, appoint a leader.
- Have not gathered classes, groups quickly and neatly.
- Use clear commands in operating the classroom.
* Teaching equipment usage
- Courts and yards: safe environment.
- Tools: Practice mats, strike pads, kick pads, practice bags ... have not been paid attention to and used.
* Prevent injuries during practice
- Warm up fully before training.
- Prepare courts and yards, equipment, training clothes.
- The teacher has a good grasp of movements' techniques.
- The teacher have not really mastered protecting and helping methods.
- Continuously educate students about the awareness of injury prevention in training.

Weak grade (under 5 points)

* Pedagogical manners in Physical Education and Sports Training, communication ability in class.
- Sportwear in accordance with regulations.
- Slow, unserious manner, the voice is not loud or clear (count the beat or give commands).
- Do not use general Vietnamese.
- Demonstrateinsignificant pedagogical characteristicsin communicating with students.
- Use unattractive language which do not stimulate students' interest in learning
* Modeling ability
- Making incorrect models of amplitude, rhythm, and basic postures.
* Modeling methods
- The ability to arrange the angle and speed of modeling is poor.
- Number of models is not consistent with the purpose and requirements of each modeling time.
* Teaching ability
- Not suitable with teaching targets
- Do not emphasize key requirements, or key techniques.
- Lengthy, unrelated to existing practice experience.
* Ability to detect technical errors
- Do not cover the class and watch students practice to detect technical errors.
- Unable to distinguish basic technical errors, have not grasped the causes of these technical errors.
* Methods of correcting technical errors
- Do not use verbal and signal reminders well.
* Ability to organize classes

- Organize class strictly, however, the formation is not formed and moved reasonably(receiving class, going to class - training formation – watching modeling formation – playing games formation ...), does not take the area of practice mats, sun direction, wind direction, influence of the environment, optimal angle when watching modeling ... into consideration.
- Groups division and leader appointment are not good.
- Gather class, groups slowly.
- Use unclear commands in operating the classroom.

* Teaching equipment usage

- Courts and yards: safe environment.
- Tools: running paths, jump pits, push and throw platforms ... are not used.

* Prevent injuries during practice

- Warm up fully before training.
- Prepare courts and yards, equipment, training clothes carefully.
- The teacher have not mastered movements' techniques
- The teacher have not mastered protecting and helping methods.

Referee Performance:

Excellent grade (9-10 points)

* Posture and manner in operating competition

- Dignified, confident posture, nice and proper outfit, in accordance with regulations.
- Referee movements such as using the flag are decisive, proper and powerful.
- Create trust in viewers.

* Implementation of the competition rules

- Firmly grasp the rules of the competition and deal with situations fairly and objectively
- Ability to observe widely, not missing faults during the competition.

* Ability to handle situations.

- Deal with the situation delicately and in accordance with the rules of competition.
- Accurate judgment, quick and decisive decisions.
- While dealing with situations, politeness and respect towards athletes are shown.

* Ability to determine the severity of injuries

- Quickly detect injury risks of athletes.
- Identify the severity of the injuries well.

Good grade (7-8 points)

* Posture and manner in operating competition

- Dignified, confident posture, outfit is in accordance with regulations.
- Referee movements such as using the flag are decisive and proper.

* Implementation of the competition rules

- Understand the rules of the competition and deal with situations objectively.
- Ability to observe is relatively good, do not miss faults in competition.

* Ability to handle situations.

- Deal with situations in accordance with the competition rules.
- Accurate judgment, quick decision.
- While dealing with situations, it is necessary to show politeness and respect towards athletes.

* Ability to determine the severity of injuries
- Quickly detect the injuries of athletes.
- Relatively good evaluation of the severity of the injuries.

Average grade (5-6 points)
* Posture and manner in operating competition
- Dignified, confident posture, outfit is in accordance with regulations.
- Referee movements such as using the flag are not yet decisive.

* Implementation of the competition rules
- Know the rules of the competition, but handle the situation is not objective.
- Can observe widely but still overlook errors during the competition.

* Ability to handle situations.
- Can deal with situations in accordance with the competition rules but still make small errors.
- Accurate judgment but the decision is not made quickly.
- Still show a short-tempered attitude while dealing with situations, do not respect the athletes.

* Ability to determine the severity of injuries
- Can detect athletes' injuries.
- Cannot clearly evaluate the severity of the injuries.

Weak grade (under 5 points)
* Posture and manner in operating competition
- Posture is not dignified, confident.
- Referee movements such as using the flag are not decisive but still confused.

* Implementation of the competition rules
- Do not firmly grasp the rules of the competition and handle the situations badly
- The ability to observe is poor, overlook many errors during the competition.

* Ability to handle situations.
- The way of handling the situations is still against the competition rules.
- Judging situations incorrectly.
- Shout and showa disrespectful attitude to athletes.

* Ability to determine the severity of injuries
- The ability to detect injuries is slow.

3.2. Assessing the actual situation of the pedagogical capacity of Karate students.

Understanding the actual situation of the pedagogical ability of Karate students in Bac Ninh Sports University, the topic assessed 26 students of Course 52 in the Sports Training department, and 15 students of Course 53 in the Sports Training department with the selected criteria. The results are shown in Table 2 and Table 3.

Table 2. Actual situation of the pedagogical capacity of Course 52 Karate students of the Sports Training department (n = 26)

No.	Content	Evaluation level							
		Excellent		Good		Average		Weak	
		n	%	n	%	n	%	n	%
I. Lesson preparation									
1	Demonstrating enough objectives (tasks)	4	15.3	9	34.6	10	38.4	3	11.5
2	Choose reasonable teaching methods	1	3.8	4	15.3	12	46.0	9	34.6
3	Use teaching tools reasonably	1	3.8	6	23.0	15	57.6	4	15.3
4	Allocate time during class	3	11.5	5	19.2	10	38.4	8	30.7
5	Prepare lessons in the right format and follow the correct teaching process.	4	15.3	7	26.9	10	38.4	5	19.2
II. In-class performance									
1	Pedagogical manners in Physical Education and Sports Training - communication ability in class	1	3.8	4	15.3	17	65.4	4	15.3
2	Modeling ability	1	3.8	3	11.5	16	61.5	6	23.0
3	Modeling methods	3	11.5	4	15.3	13	50.0	6	23.0
4	Teaching ability	1	3.8	3	11.5	14	53.8	8	30.7
5	Ability to detect technical errors	3	11.5	3	11.5	13	50.0	7	26.9
6	Methods of correcting technical errors	1	3.8	5	19.2	12	46.0	8	30.7
7	Ability to organize classes	1	3.8	4	15.3	17		4	15.3
8	Teaching equipment usage	3	11.5	7	26.9	10	38.4	6	23.0
9	Prevent injuries during practice	3	11.5	9	34.6	10	38.4	4	15.3

III. Referee performance in Karate									
1	Posture and manner in operating competition	1	3.8	3	11.5	16	6105	6	23.0
2	Implementation of the competition rules	1	3.8	6	23.0	7	26.9	12	46.0
3	Ability to handle situations	1	3.8	5	19.2	12	46.0	8	30.7
4	Ability to determine the severity of the injury	3	11.5	7	26.9	10	38.4	6	23.0

Table 3. Actual situation of the pedagogical capacity of Course 53 Karate students of the Sports Training department (n = 15)

No.	Content	Evaluation level							
		Excellent		Good		Average		Weak	
		n	%	n	%	n	%	n	%
I. Lesson preparation									
1	Demonstrating enough objectives (tasks)	2	13.2	5	33.3	7	46.6	1	6.6
2	Choose reasonable teaching methods	1	6.6	3	20.0	7	46.6	4	26.4
3	Use teaching tools reasonably	1	6.6	3	20.0	8	53.3	3	20.0
4	Allocate time during class	2	13.2	3	20.0	6	40.0	4	26.4
5	Prepare lessons in the right format and follow the correct teaching process.	2	13.2	5	33.3	6	40.0	3	20.0
II. In-class performance									
1	Pedagogical manners in Physical Education and Sports Training - communication ability in class	1	6.6	3	20.0	8	53.3	3	20.0
2	Modeling ability	1	6.6	2	13.2	9	60.0	3	20.0
3	Modeling methods	1	6.6	2	13.2	10	66.6	2	13.2

4	Teaching ability	1	6.6	2	13.2	8	53.3	5	
5	Ability to detect technical errors	1	6.6	3	20.0	8	53.3	3	20.0
6	Methods of correcting technical errors	1	6.6	3	20.0	7	46.6	4	26.4
7	Ability to organize classes	1	6.6	3	20.0	8	53.3	3	20.0
8	Teaching equipment usage	2	13.2	3	20.0	8	53.3	2	13.2
9	Prevent injuries during practice	2	13.2	5	33.3	6	40.0	2	13.2
III. Referee performance in Karate									
1	Posture and manner in operating competition	1	6.6	2	13.2	8	53.3	4	26.4
2	Implementation of the competition rules	1	6.6	3	20.0	8	53.3	3	20.0
3	Ability to handle situations	1	6.6	2		8	53.3	4	26.4
4	Ability to determine the severity of the injury	1	6.6	4	26.4	7	46.6	4	26.4

Table 2 and Table 3 show: The pedagogical capacity of Karate studens in the Sports Training department of Bac Ninh Sports University is still weak, the scores of students are mainly average and weak, and only few students achieved excellent and good scores. This result partly shows the fact that graduates do not meet the current requirements of the units that employ these staff, but while working, students must constantly self- improve their knowledge and experience to complete and meet the requirements of the teaching work.

4. Conclusion:

The research process of the project has selected 3 groups of criteria to evaluate the pedagogical ability for Karate students in the Sports Training department, Bac Ninh Sports University, including: lesson preparation with 5 criteria; In-class performance with 9 criteria; Referee performance with 4 criteria.

The test conducted through these groups of criteria shows that the pedagogical capacity of Karate students of Bac Ninh Sports University is still weak, the students' scores are mainly average and weak, and there are only few students who achieved excellent and good scores. This result partly shows that in reality, graduates do not meet the current requirements of the employing units. Therefore, in the process of their work, students must constantly self-improve their knowledge and experience to complete and meet the requirements of the teaching work.

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Namaz is a Scientific and Spiritual Yoga

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Abstract:

Stress has become a way of life. Whether the days are full of multiple goals and endless obligations, traffic jams and transit delays, complex systems of bureaucracy and finance, or an overwhelming array of in-person and virtual relationships, the pace of current human existence is bursting at the seams.

For centuries, sages have relied on yoga to transcend earthly limitations. Each meditative pose is an effort to identify pockets of pain that accumulate inside the body. Each inhale confronts suffering. Each exhale is an attempt to transcend it. Through this process, worry is replaced with loving kindness.

Now, bodies of research are proving that yoga is more than a niche spiritual force for particularly enlightened beings.

Introduction:

Salaah or Namaz is an obligatory prayer performed by a practising Muslim five times a day. The Namaz is performed early in the morning, afternoon, evening, near sunset and late evening. Each Namaz lasts for between five to 10 minutes, and so cumulatively the prayers take up around 30 minutes in a day.

Derived from the Sanskrit word yuj, Yoga means union of the individual consciousness or soul with the Universal Consciousness or Spirit. Yoga is a 5000-year-old Indian body of knowledge. Though many think of yoga only as a physical exercise where people twist, turn, stretch, and breathe in the most complex ways, these are actually only the most superficial aspect of this profound science of unfolding the infinite potentials of the human mind and soul. The science of Yoga imbibes the complete essence of the Way of Life.

The Origin of Yoga:

The practice of Yoga is believed to have started with the very dawn of civilization. The science of yoga has its origin thousands of years ago, long before the first religions or belief systems were born. In the yogic lore, Shiva is seen as the first yogi or Adiyogi, and the first Guru or Adi Guru.

Several Thousand years ago, on the banks of the lake Kantisarovar in the Himalayas, Adiyogi poured his profound knowledge into the legendary Saptarishis or "seven sages". The sages carried this powerful yogic science to different parts of the world, including Asia, the Middle East, Northern Africa and South America. Interestingly, modern scholars have noted and marvelled at the close parallels found between ancient cultures across the globe. However, it was in India that the yogic system found its fullest expression. Agastya, the Saptarishi who travelled across the Indian subcontinent, crafted this culture around a core yogic way of life.

The Spirit of Yoga:

For those who practice yoga, the spiritual benefits are clear. For example, one needs only to join Janet Stone for Surya Flow to awaken the internal light inside. In less than one

hour, the mind is clear, the body is warm and it's entirely possible to feel more connected to other living beings.

With any yoga practice, the series of poses, breathing exercises and meditations still the mind as the body moves. The breath becomes a mantra. Meditation is a prayer.

Yet, yoga is not magical. It cannot banish all worldly stress. It can change our brain chemistry while reducing the amount of stress we experience on a daily basis, but reaping its benefits requires time and dedication. Most importantly, the investment is worth it. Substantial scientific research is beginning to confirm what was once based simply on intuition.

Salat, or prayer, should be performed very consciously and deliberately, both physically and spiritually. There is a lot of discussion on the spiritual significance of Salat. The physical significance, however, is often overlooked.

During Qiyam and Namaste, there is an even distribution to both feet. This will ease the nervous system and balance the body. The body is charged with positive energy. This position straightens the back and improves posture. In this position, a verse of the Quran is recited: 'And guide us to the straight path.' Some have interpreted this to mean the alignment of our Chakras. While reciting more verses from the Quran, the sound vibrations of the long vowels ā, ī, and ū stimulate the heart, thyroid, pineal gland, pituitary, adrenal glands, and lungs, purifying and uplifting them all.

Ruk'u and Ardha Uttanasana fully stretch the muscles of the lower back, front torso, thighs, and calves. Blood is pumped into the upper torso. This position tones muscles of the stomach, abdomen, and kidneys.

Julus and Vajrasana aid the detoxification of the liver and stimulate peristaltic action of the large intestine. This position assists digestion by forcing the contents of the stomach downward. It helps in curing varicose veins and joint pains, increases flexibility, and strengthens the pelvic muscles.

Sujud is the most important position in prayer. This position stimulates the brain's frontal cortex. It leaves the heart in a higher position than the brain, which increases flow of blood into upper regions of the body, especially the head and lungs. This allows mental toxins to be cleansed. This position allows stomach muscles to develop and prevents growth of flabbiness in the midsection. It maintains proper position of fetus in pregnant women, reduces high blood pressure, increases elasticity of joints and alleviates stress, anxiety, dizziness and fatigue.

Benefits of Namaz:

Namaz is one of the important means for health, happiness and harmony. Offering regular **Namaz** keeps one fit and healthy by burning extra calories thereby losing weight. **Namaz** is one of the effective ways for weight loss as well as to control obesity. **Namaz** stretches your muscles and helps to provide tone body.

The Science of Yoga:

It is known that yoga stretches the body, supports circulation while flushing out the blood and lymph systems, stimulates every major organ, tones the muscles and helps to removes impurities while encouraging ultimate flow.

While there is still a need for more in-depth, robust research, scientific studies suggest that a dedicated yoga practice can aid in the treatment of many common health afflictions, including:

Pain

A few different studies found that a weekly yoga practice can reduce lower back pain and may be more effective for addressing pain than standard medical care or exercise therapy. In addition, it improves the daily function of people struggling with curvature of the spine due to fibromyalgia and osteoporosis-related conditions.

Anxiety

Anxiety has become one of the most common disorders in the US and studies have shown that yoga may be more effective, and possibly less expensive, than pharmacological treatment in alleviating symptoms. In fact, one study found that a yoga session increased brain γ-aminobutyric (GABA) levels by 27 percent in yoga practitioners; anxiety and depression are traditionally associated with low GABA levels.

Depression

Conducting scientific studies to prove that a yoga class has a positive effect on the mood may seem unnecessary to a dedicated yogi but nonetheless, when those who struggle to get out of bed manage to muster the strength to strike a pose and breathe through the low point, the effort is proven to uplift. Of the 17 subjects that completed the trial, all experienced significant reductions in anger, depression, neurotic symptoms and low frequency heart rate variability; 11 of the 17 subjects achieved remission levels post-intervention. Not only does yoga have the power to reduce depression, but it is potentially a practice that can sustain improved mental health.

Cardiovascular Disease and Weight Loss

Those involved in a yoga practice, compared to those who did not exercise, displayed improvement to body mass and weight, blood pressure and cholesterol over time. The evidence is promising for cardio-metabolic health.

Cancer

One of many studies explores quality of life, psychosocial and symptom-management benefits of yoga intervention and found positive outcomes. The analysis supported preliminary evidence of the significance of yoga for improving quality of life and symptoms in cancer survivors.

Post-Traumatic Stress Disorder

Yoga may not erase all attachments to a painful past, but it can inspire healing through peaceful embodiment and an awakened sense of calm.

Gene Alteration

According to a 2013 study, yoga can improve gene expression, especially in terms of immune function. Experimental sessions of gentle yoga postures, breathing exercises and meditation had a significantly greater effect on gene expression in peripheral blood mononuclear cells of subjects, compared with the control group protocol of walking in nature and listening to relaxing music.

Smoking Cessation

Yoga may squash cravings in general but it has also been proven to reduce perceived stress and negative affects in those attempting to quit smoking.

The Science of Meditation:

Those seeking to handle stress, that feels intimidated by yoga, may find solace in the effects of transcendental meditation (TM). TM is a state of mind that can be achieved anywhere at any time through deep breathing, the use of soothing mantras and an overall quest for stillness. Meditation is proven to increase one's ability to regulate emotion, sleep more peacefully and possibly even improve the memory. In fact, group meditation may have the power to inspire world peace. Discussing this scientific phenomenon in Beyond Cosmic Consciousness – Part 1, David Wilcock asserts that, "a single moment of pure consciousness is worth more for humanity than an entire lifetime of good works."

Conclusion:

Connection between mind and body is part of our everyday experience.Many people perform Yoga with soothing instructions to help them meditate. In a soft voice, a man or woman would describe how to breathe, what to imagine, and what to feel. Recitation of the Quran serves similarly as guidance to the individual. However, it serves not only to guide you during Salat but also to guide your life. Many describe meditation as a source of enlightenment as it leaves them at peace and eases their daily activities. Salat serves this exact purpose. Guidance and peace are core values in Islam to the point that prayer is needed five times a day! It is so significant that a sect of Islam, Sufism, was created to make meditation their main focus. The daily stresses that encompass life are cornerstone to living on earth but yoga has the power to transform the effects of stress on the body. Inside each human there is a super power waiting to be tapped. That is the power to take a deep breath.

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Recovery Process of Cardiovascular and Hemato-Biochemical Functions of High-Level Athletic Athletes from Intensive Exercises

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Abstract:

Using various common scientific methods, the study selects 03 indexes of assessing the recovery ability of cardiovascular functions and 03 indexes of assessing recovery ability of hemato-biochemical functions of high-level Athletic athletes from intensive exercises. On such a basis, using the methods of medical examination and hemato-biochemical tests to evaluate the recovery process of cardiovascular and hemato-biochemical functions of the athletes after intensive exercises at the times, including before movement, after startups, upon movement (10 seconds after finishing exercises), 10 minutes after exercises and 24 hours after exercises.

Keywords: Recovery, hemato-biochemistry, cardiovascular, functions, high-level athletes, Athletics, exercises, intensive, etc.

Rationale:

Regular sports practice brings about changes in the direction of advantageous physical adaptation which clearly expressed through the indexes of body functions. Cardiovascular and hemato-biochemistry indexes are sensitive to the volume of exercises in sports training and competitions. Therefore, monitoring the index changes under the influence of the volume of exercises will help to accurately assess the volume of exercises taking direct on the body.

Today, the system of modern facilities applied in sports allows to exactly assess the training levels and recovery ability of athletes after the volume of physical exercises, as well as the effect of training and coaching. This is an important basic in athlete training.

Scientists in the world now find out the rules of recovery after the volume of physical exercises, the characteristics of fatigue after the volume of exercises at various intensities, necessary time to finish the recovery of different hemato-biochemical processes at the rest after the muscle movement, as well as the recovery facilities and methods for athletes from training and competitions. Nevertheless, in Vietnam this question is not paid attention.

Thanked to available upgraded system of facility, we conduct a study: Recovery process of cardiovascular and hemato-biochemical functions of high-level Athletic athletes from intensive exercises.

Research Methods:

The study uses the following methods: Data analysis and synthesis; interview; medical examination; blood tests (hemato-biochemical tests), and mathematical statistics.

Results and Discussion:

1. Selecting indexes to evaluate recovery ability of cardiovascular and hemato-biochemical functions of high-level Athletic athletes from intensive exercises

Through using the methods of data analysis and synthesis and interview, we select 03 indexes to evaluate the recovery ability of cardiovascular functions of high-level Athletic athletes after intensive exercises, including heart rate (beats/ min), maximum blood pressure (mmHg), minimum blood pressure (mmHg), at the same time select 03 indexes to evaluate the recovery ability of hemato-biochemical functions of high-level Athletic athletes after intensive exercises, including urea (mg/dl), glucose (mmol/l), and blood lactate (mmol/l).

The study subjects are 20 Athletic athletes at first class and sports master, consisting of 10 male athletes at the age of 18-20 and 10 female athletes at the age of 16-17.

The selected exercises representing for intensive exercises is 3000 m run (s)

We get the statistics to evaluate the characteristics of the recovery process of cardiovascular and hemato-biochemical functions at the following times, including before movement (before doing training exercises), after startups (right after finishing general and specialized startups and prepare to do intensive exercises), upon movement (10 seconds after finishing the volume of intensive exercises), 10 minutes after movement (10 minutes after finishing exercises) and 24 hours after movement.

The statistics to evaluate the cardiovascular functions is gained by directly feeling the pulse and measuring blood pressure by Omron Mechanical Blood Pressure Monitors.

The statistics to evaluate the hemato-biochemical functions is gained through the Automated Hematological and Biochemical Analyzers, Cobas 6000 and AU 2700, made in Japan.

2. Recovery process of cardiovascular functions of high-level Athletic athletes during intensive movement

2.1. Characteristics of indexes reflecting cardiovascular functions of high-level Athletic athletes before intensive movement

The cardiovascular indexes in static and dynamic states of body always attract special attention of coaches and scientists because of their informative and sensitive characteristics to the volume of movement. Studying the indexes, they are able to assess the effective degree of the movement volume, adaptive ability of the body to the movement volume, the recovery degree, and especially, the long-term changes reflecting the degree of adaptive changes as well as the effect of training course. The indexes in static state well reflect the long-term changes occurring during the course of training and competitions.

The characteristics of the indexes reflecting the cardiovascular functions of high-level Athletic athletes before movement are presented in Table 1.

Table 1. Cardiovascular characteristics of high-level Athletic athletes before movement

No.	Index	Male (age of 18-20) (n=10)		Female (age of 16-17) (n=10)	
		$\bar{x}$	σ	$\bar{x}$	σ
1	Heart rate (beats/minute)	67.78	6.12	68.23	6.21
2	Maximum blood pressure (mmHg)	115.3	7.89	112.7	7.43
3	Minimum blood pressure (mmHg)	65.42	4.78	64.37	4.83

Table 1 shows before the movement, the characteristics of the indexes reflecting the cardiovascular functions of the athletes are within the normal biological limitation of Vietnamese at the same age, sex and at a good threshold. This proves that the characteristics

of the indexes of the Athletic athletesare good, which allows to increase the volume of movement through the training.

As studying, we regard the value of the indexes at the time before movement as a basic to assess their changes throughout other times.

2.2. Recovery process of cardiovascular functions of high-level Athletic athletes during intensive movement

The cardiovascular indexes are extremely sensitive to the volume of movement and shortly after the startups, the indexes have considerable changes, at the same time, the changes occur during the movement, at rest after exercises, etc. The specific recovery process of cardiovascular functions of the athletes during intensive movement at the times of after startups, upon movement (10 seconds after finishing the exercises), 10 minutes after exercises and 24 hours after exercises is presented in Table 2.

Table 2. Recovery process of cardiovascular indexes of high-level Athletic athletes during intensive movement (Male – age of 18-20 (n=10); Female – age of 16-17 (n=10)

No.	Index	Sex	Times									
			After startups		Upon movement			10 minutes after exercises			24 hours ater exercises	
			$\overline{x}$	σ	$\overline{x}$	σ	% change	$\overline{x}$	σ	% recovery	$\overline{x}$	σ	% recovery
1	Heart rate (beats/min)	Male	105.24	10.23	185.67	16.23	76.43	113.67	10.13	89.52	70.25	7.05	143.50
		Female	104.75	10.51	182.48	16.47	74.21	115.63	10.37	86.00	70.76	7.01	143.73
2	Maximum blood pressure (mmHg)	Male	122.81	11.89	152.43	12.47	24.12	125.43	9.21	91.15	117.26	10.28	118.74
		Female	121.28	11.12	156.72	12.23	29.22	126.18	8.75	86.17	115.23	10.35	117.07
3	Minimum blood pressure (mmHg)	Male	65.08	6.12	65.07	6.15	0.02	65.08	6.18	100.00	65.10	6.41	300.00
		Female	64.23	6.04	64.22	6.18	0.02	64.23	6.25	100.00	64.25	6.42	300.00

Bảng 4. Recovery process of hemato-biochemical functions of high-level Athletic athletes during intensive movement (Male – age of 18-20 (n=10); Female – age of 16-17 (n=10)

No.	Index	Sex	Times									
			After startups		Upon movement			10 minutes after exercises			24 hours ater exercises	
			$\overline{x}$	σ	$\overline{x}$	σ	% change	$\overline{x}$	σ	% recovery	$\overline{x}$	σ	% recovery
1	Urea (mg/dl)	Male	4.57	0.41	7.51	0.74	64.33	7.5	0.72	0.34	4.62	0.45	98.30
		Female	4.49	0.45	7.45	0.72	65.92	7.44	0.71	0.34	4.53	0.44	98.65
2	Glucose (mmol/l)	Male	4.81	0.46	4.53	0.46	8.37	4.8	0.45	96.43	4.75	0.47	78.57
		Female	4.79	0.47	5.19	0.52	8.35	4.8	0.46	97.50	4.61	0.46	145.00
3	Blood lactate (mmol/l)	Male	1.86	0.14	14.52	1.43	680.65	7.82	0.76	52.92	1.81	0.18	100.39
		Female	1.63	0.15	14.61	1.43	796.32	7.88	0.75	51.85	1.59	0.16	100.31

Table 2 shows:

- After startups at high intensity, the cardiovascular indexes of the athletes have remarkable changes. Specifically, the heart rate is smaller than after finishing startups; however, it is slighter than after startups at maximum and high intensity. The change increases the blood circulation preparing for the movement. Particularly, the indexes of maximum and minimum blood pressure have unmarked changes in comparison with the results gained before movement.

- During intensive movement, the cardiovascular indexes of the athletes have considerable changes. Specifically, the heart rate of all athletes sharply increases to improve blood circulation to organs of the body and works well (about 182-185 beats/min), maximum blood pressure increases corresponding with the volume of movement, about 152-156 mmHg. Minimum blood pressure is unchanged or slight decrease. This is completely appropriate to the characteristics of movement at high intensity.
- At the time of 10 minutes after finishing intensive exercises, the cardiovascular functions of athletes have dramatic recovery in comparison with the time of 10 seconds after exercises. However, heart rate is still high in comparison with the time after startups, about 113-115 beats/min. The average degree of recovery is from 86 to 89 %. The maximum blood pressure shows drastic decrease and gains full recovery compared with the time after startups. Simultaneously, the minimum blood pressure shows small decrease or unchanged compared with the time after startups.

3. Recovery process of hemato-biochemical functions of high-level Athletic athletes during intensive movement

3.1. Characteristics of indexes reflecting hemato-biochemical functions of high-level Athletic athletes before intensive movement

The hemato-biochemical indexes are considered the most important ones, highly sensitive to the volume of movement as well as objectively and faithfully reflect the body ability of biological adaption to the volume of movement and the degree of body recovery after exercises. Nevertheless, their practicability and universality are low because of lack of biological knowledge and high study expenses. Therefore studies of the indexes are only regarded as specialized ones and applied for high-level athletes.

On the ground of study scope, we analyze 03 selected indexes. The specific characteristics of the indexes of Athletic athletes at the time before intensive movement are presented in Table 3.

Table 3. Characteristics of hemato-biochemical indexes of Athletic athletes before intensive movement

No.	Index	Male (age of 18-20) (n=10)		Female (age of 16-17) (n=10)	
		$\bar{x}$	σ	$\bar{x}$	σ
1	Urea (mg/dl)	4.59	0.42	4.47	0.39
2	Glucose (mmol/l)	4.61	0.41	4.58	0.43
3	Blood lactate (mmol/l)	1.64	0.04	1.59	0.03

Table 3 shows before exercises, the hemato-biochemical indexes of high-level Athletic athletes are within normal biological limitation accessing optimal threshold. Nonetheless, it should be noticed that these are the indexes measured in athletes, not entirely appropriate with the biological constant indexes of normal persons. Specifically, the biological constant index of blood lactate (mmol) in static state shows fluctuation of 0.8-1.5 meanwhile the index of athletes shows completely recovery, less than 3.0. Mental stress is supposed to be the reason therefore the indexes should be monitored especially at the time before competition.

3.2. Recovery process of hemato-biochemical functions of high-level Athletic athletes after intensive exercises

The recovery process of hemato-biochemical functions of high-level Athletic athletes after intensive exercises at the times, including after startups, upon movement, (10 seconds after finishing the exercises), 10 minutes after exercises and 24 hours after exercises is presented in Table 4.

Table 4 shows:

- After startups at high intensity, though the hemato-biochemical indexes of the athletes have small change in compared with the time before exercises, they are at optimal threshold following the normal biological limitation of Vietnamese.
- At the time during intensive movement, all of the indexes increase. Specifically, the index of urea shows an increase of 60-70 compared with the time before startups, Glucose shows an inconsiderable increase because upon movement, the body mobilizes glucose stored in the sliver - its biggest reserve organs and the mobilization could be maintained in 30 minutes depending on kinds of exercises and the amount of glucose in athletes body at the time beginning exercises. The duration of intensive movement is about 15 minutes so the slight increase of the indexes of glucose in the movement is totally appropriate with normal movement rules. The most noticed issue relating to hemato-biochemical indexes is the significant increase of blood lactate (mmol)- the index reflects the anaerobic capacity. The increase of AL index is about 600-800% compared with the time after startups and can reach from 14 to 15mmol.
- At the time of 10 minutes after intensive exercises, the indexes of hematological biological functions have considerable change. Specifically, the index of urea slightly changes in comparison with the time during movement, <1%, which is fully appropriate with movement rules because the urea index only gets recovery after 8 to 12 hours of finishing exercises; the index of Glucose gets recovery of 96-98% in comparison with the time after startups; the index of blood lactate (mmol) gets 50% recovery in comparison with the time after startups which is completely appropriate with movement rules. The AL index begins to increase after movement for 2 minutes and recover at the time of 5 minutes after exercises.
- At the time of 24 hours after exercises, the hemato-biochemical indexes of athletes show a significant recovery in compared with the time before exercises. Especially, the index of blood lactate (mmol) is still higher than before exercises, which is a reason causing muscle fatigue after intensive exercises.

Conclusion:

1. Selecting 06 indexes of evaluating the recovery ability of cardiovascular and hemato-biochemicalfunctions of high-level Athletic athletes fromintensiveexercises, including heart rate (beats/min), maximum blood pressure (mmHg), minimum blood pressure (mmHg), urea (mg/dl), glucose (mmol/l), and blood lactate (mmol/l).
2. Evaluating the progress of cardiovascular indexes of high-level Athletic athletes duringintensiveexercises shows that they increase along with the increase of the volume of movement and achieve the highest increase at the time of 10 seconds after finishing exercises. At the time of 10 minutes after exercises, the index gains a substantial recovery (except for the heart rate) and complete recovery at the time of 24 hours after exercises.

3. Evaluating the recovery progress of hemato-biochemicalfunctions of high-level Athletic athletes fromintensiveexercises presents that at the time of 10 seconds after intensive movement, all the indexes of hemato-biochemicalfunctions of athletes show an increase, especially the drastic increase of blood lactate (mmol)- the index reflecting the anaerobic capacity. The hemato-biochemical indexes have different degree of recovery and gain substantial recovery at the time of 24 hours after exercises (except for blood lactate one).

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Mentoring Program – an Insightful Experience for Student-Teachers and Reflective Experience for Teacher-Educators & Future Directions

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Abstract:

Mentoring is an effective way for improving the student-teacher's (ST) teaching skills and develops them holistically. It is a dyadic exchange process where both concerned learn and benefit from each other's experiences and help each other in their growth. This study focused on impact of mentoring program (MP) on development of STs and also discusses the reflective experience of the teacher-educators (TEs) and the future directions MP provided for imparting better teacher education. Six STs were purposively selected as mentees and six masters' students pursuing pedagogy course as their mentors. This study component was based on a qualitative approach. Data was collected through interviews and focus group discussion. The data analysis reiterated the efficacy of MP. Mentored STs showed considerable improvement in teaching skills and understanding of teaching-learning process. The qualitative analysis had some discerning findings for the TEs. It threw light on the weakness in program execution, drawbacks in the practice-teaching module, teaching practices of the TEs, lack of appropriate resources for STs. The revelations of the study initiated certain new practices, interventions, systemic changes & policy initiatives. General observations and conferences with STs, evaluation of students and activities divulge the changes and developments gradually taking place in the STs skills and attitudes as well as the effectiveness of the PETE program.

Keywords: mentoring program, teaching skill, teacher-educators, reflective practices

Rationale:

The Vision of Chandrashekhar Agashe College of Physical Education (C.A.C.P.E.) during the time of this intervention was to be a National Leader in communicating, creating knowledge and environment about physical activity to enhance the Quality of life for all. The Mission of the College was to create and communicate information about sport, exercise and physical activity. The college achieved its Mission through student centred instruction, applied and basic scholarship and professional services. It focused on working directly to produce lifelong learning and participation in human movement to enhance Quality of life for all. (agashecollege.org)The objectives of the B. Ed (Physical Education) (now known as BPEd) program are:

To enable the PE student teacher,1. To know and apply discipline specific scientific and theoretical concepts critical to development of PEP.2. To plan, design and implement learning experiences that facilitate and enhance the growth of learners of diverse needs from varying backgrounds.3. To use effective communication and pedagogical skills and strategies to enhance student engagement and learning.4. To be reflective practitioner who evaluates self and seeks opportunities to grow professionally and humanistically. (UOP, B.Ed. (Physical Education) revised syllabus 2013).

To achieve the objectives, the college takes multiple quality initiative. Mentoring program is one of the best practices used in the college. The institute evaluates its programs, transactions and outcome very often. In the struggle of bringing in quality and producing the best PE teachers, college has experimented with various ideas relating the PETE. Mentoring program was introduced at the under graduate teacher education level for the new teachers. It was the effort of pedagogy faculty and the masters pedagogy students. This article throws light on how the mentoring program led to considerable improvement in not only practice teaching by student teachers but also modifications in teacher education program, in the form of both the changes in university syllabus and best practices run at the college level. Physical education will prosper as a subject matter to the degree that those who teach it are effective and even experts. Student teachers can teach effectively with limited knowledge of the subject which is developed through the PETE program.

Mentoring and its Role in the PETE Program:

The first year of teaching is a critical time for professional growth and teacher development requiring emotional and pedagogical support from an experienced mentor. Beginning teachers encounter numerous challenges and demands when beginning their teaching careers in unfamiliar schools. Each school presents a myriad of new relationships to foster, i.e., staff, students, parents, and administrators, which can be overwhelming. Some reasons for new teacher dissatisfaction are linked to the school environment that includes poor administrative and parental support, difficult teaching loads, heavy administrative loads, feeling powerless and isolated, and conflicts with colleagues (Ingersoll & Smith, 2003; Liston, Whitcomb, &Borko, 2006; McCormack & Thomas, 2003a). The first year of teaching is a critical time for professional growth and learning to teach often accomplished with the assistance of mentor teachers, colleagues, and administrators. One specific relationship that has gained attention in school supervision literature is the benefit of an assigned and effective mentor (e.g., Herbert & Ramsey, 2004; McCormack & Thomas, 2003a; Odell & Ferraro, 1992). This relationship can mean the difference between a fruitful, rewarding teaching experience, and an unsuccessful introduction to the profession of teaching. The mentor offers an orientation to the school environment, insights and strategies for successful teaching, modeling and critiquing teaching styles, and providing guidance to the new teacher.

Benefits for Mentor and Protégé:

Mentoring allows student teachers to voice their concerns, share valuable teaching resources, get advice about dealing with difficult students, share strategies for time management and parent conferences, and exchange creative lesson plans. One must always keep in mind that the goal of a mentoring program is to transform novice teachers into successful professionals Heider, K.L. (2005). It is argued by Kram (1985) that the most successful mentors are those who volunteer to mentor and who also want to enhance their

own career development. It is a dyadic exchange process where both concerned learn and benefit from each other's experiences and help each other in their growth.

Rationale of the Study:

The goal of the institution is to develop effective physical education teachers by communicating, creating knowledge and environment about physical activity to enhance the Quality of life for all. The first year of teaching is a critical time for professional growth and teacher development as it presents myriad new relationships to foster which can be overwhelming and stressful, so to ease the stress they requiring emotional and pedagogical support from an experienced mentor.

It is a one on one relationship where the mentor supports, guides, and counsels a young adult as he or she accomplishes mastery of the adult world or the world of work (Kram, 1985). Here the mentor helps develop belief systems that will help the student teachers during his teaching career. Since C.A.C.P.E aims at developing physically educated and effective teachers, the mentoring programme will help the physical education teacher education programme run more effectively if proved to be more effective.

Purpose of the Study:

The study intended to investigate the influence of the mentor-protégé interactions on developing effectiveness in teaching. Understanding the concerns and difficulties faces by STs and evaluate the teacher education program was another goal. The study also tried to come up with suggestions, changes and modifications in the PETE program so as to achieve the program outcome effectively.

Methods:

Design

Qualitative approach was employed for collecting, analyzing, research data. The data on effectiveness of mentoring program was collected through semi-structured interviews and focus group discussion was used in phased manner. The design was a mixed method sequential exploratory design; however, this article deals with only the qualitative aspect.

Setting & Participants

The study was delimited to very a limited number student teachers and mentors and teacher educators of C.A.C.P.E. Pune. Rsearcher selected six STs using 'Non-Random-Purposive sampling' technique. (Best and Kahn)The sample was selected based in certain inclusion & exclusion criteria after consulting the in-charge faculty from the college. This sample of six STs was subjected to the mentoring program. In the process to evaluate the program, the opinions of mentored, non mentored STs and the teacher educators at the college were taken into consideration.

Procedures

For the purpose of the study mentors were selected based on their past work experience in the teaching field, their ability to listen, guide, be a role model, instruct, decision making skills and are from the Pedagogy class where they had gone through micro and practice teaching classes and had experience of observing lessons of student teachers this strengthened their pedagogical knowledge. Workshop of 8 hours duration was conducted to

train the mentors in their role of being a mentor and assessing. It was conducted for five days consecutively for about 1.5 to 2 hours each. The mentees were selected after taking their consent to be part of the study based on their potential to take lessons and his ability to listen that is to follow instructions, take feedback positively, understand teaching techniques and be a better teacher and a person. The mentees were briefed about their role and the mentor's role in this program.

The mentoring program began during the peer group teaching process so that the mentored and non mentored student teachers had equal opportunities in taking classes prior to the program and are on an equal level. The mentors were assigned mentees and there was an orientation of mentors and mentees. The mentoring program was for the duration of the practice teaching lessons. The mentor also stayed in communication with the new teacher through individual conferences, telephone and email (Stedman & Stroot, 1998) where the mentors guided, instructed and directed the mentee in the areas of teaching like management, organizational techniques and in giving instructions, from planning a lesson to implementing it on the field, in the process giving feedback based on his observation. During the mentoring program the mentors met the mentee at least three times a week for duration of at least 20 minutes.

Data Analysis Tools

The data collected through interviews of mentors and concerned teachers and focus groups of mentees and non-mentored students was analyzed using for qualitative analysis technique. The data that was collected from the interviews and focus group discussion were transcribed. The transcripts were read several times and then coded. The codes that emerged further led to themes which were interpreted using general inductive approach. The data collected then was triangulated. Triangulation or greater validitytries to seek convergence, corroboration, and correspondence of results from the different methods of data collection and categories. Emerging themes (or categories) were developed which were then incorporated in a model, theory or framework.

Analysis & Discussion

For the purpose of this study, interviews of mentors and concerned teacher educators and focus group discussion of mentored and non mentored students formed the basis of qualitative analysis. To analyze qualitative data inductive analysis technique was used.The findings of this research have been mentioned in the following framework. The framework has been designed addressing the research purpose mentioned earlier.

Framework

- Stakeholder's reflections on teacher development
- Mentoring as a medium for teacher development
  - Pre lesson planning
  - Parts/ aspects of a lesson
  - Mentor Mentee Interactions
  - Unravelling potential
  - Timely Inputs and Working on Unforeseen Circumstances
  - Post lesson conference
- Relevance of Mentoring Program

The aim of any Teacher Training Institute is to develop effective physical education teachers. C.A.C.P.E. for the past 35 years has given many good physical education teachers and now is the time to reflect on the program offered here. There is a paradigm shift in the way in which people look at physical education now and there are certain schools that demand a different kind of Physical Education Teacher. To meet this kind of demand more schools are entrusting sports management to external vendors (economictimes.indiatimes.com), so there is a growing number of companies mushrooming all over India that outsource their Physical Education program.

Stakeholder's Reflections on Teacher Development:

The past experience of Teacher Educators tells us that the focus was on conventional type, old school lessons, which was 'boring" (Interview, Teacher Educator 2) for students in school. The need of the hour is to now move and "change with the times" (Interview, Teacher Educator 2) and make activities fun and interesting and this onus falls on the Physical Education teachers in school.In the last few years the institution (C.A.C.PE) is experimenting, in terms of developing P.E teachers who can meet the demands of time. "The head of the institution feels that the student teachers absolutely lack in content knowledge, their approach towards things like willingness to experiment needs to change."(Interview Teacher Educator 1) This was evident in the last few years. Since the recent introduction of the course of Pedagogy, changes have come to the forefront. A few interventions relating to pedagogical aspects like ALT-PE (Mishra.V, 2013) and appropriate feedback during teaching practice lessons (Bagul. K, 2012); some other interventions include examining the student teacher's attitude, perceptions, experiences in sports and physical education teaching (Khale. N, 2012; Rokhade.S, 2013). All this has taken place in bits and pieces i.e. it has been carried out at different times and is fragmented. This is where a strong mentoring program is the need of the hour, catering to the holistic development of a student teacher.

For a student teacher to move from being a student to a teacher he needs to be equipped with knowledge and nuances of the profession. For him to ease into this role of being an effective teacher and identify areas of professional growth he needs to learn and improve upon his skills like Instruction delivery, Class Management, Communication, Intra Personal skills and impact on student learning (resource.tqsource.org). To be able to put theory into practice, when to utilize it is important. For this he has to "draw upon his past experiences and knowledge" (Interview, Teacher Educator 1) and utilize it at appropriate times. He also needs to be willing to experiment and take risks to test his potential.

The curriculum structure plays an important role in shaping the experiences of a student teacher's experiences and development. If the focus of the curriculum is "shaky" i.e. training to teach higher grades rather than first standard onwards, student teachers will be more comfortable to teach higher grades (Interview, Teacher Educator 2). It needs to follow moving "from teaching basic/ gross motor skills to sports" (Interview, Teacher Educator 3). There is a need for change in physical education as age old methods are still used, but slowly there are changes as it is essential to "change with the times" (Interview, Teacher Educator 2). The present school curriculum focuses on developing a Physically Educated Person but this is not really happening as there is no real student learning or outcome.

Not all students who join B.P.Ed join it with the intention to be teachers. They join it with the intention to "maintain their fitness, learn more about games, to play and to qualify at

various entry levels at other options like entering the police forces."(Non-mentored 1, 2 mentored student 2, 4 focus group discussion)

Since the entire teacher training course is condensed into a single year there is limited amount of time to understand what is taught as "there is something new happening daily" (focus group discussion, mentored student 4).

Mentoring as a Medium for Teacher Development & its Relevance:

There is little time for the student teacher to assimilate and develop teaching skills and congenial attitude, so it is "little time too many expectations" (Interview, Teacher Educator 2). Since this is a crucial year for teacher development the student teacher needs all the possible help he can get, this is where the Mentoring Program can "play a big role". (Interview, Teacher Educator 4). This particular Mentoring Program had old-timers (Post graduate students) as mentors and new comers (Undergraduate students) as mentees. The mentoring program should facilitate the growth of a student teacher. It goes way beyond just taking lessons. The mentor should help the mentee develop holistically to become an effective physical education teacher which can be done by meeting the mentee's professional and personal needs. To do this the mentor did his best, and attempted to fulfill this by giving guidance and support, helping him experiment and also by sharing his professional experiences (Interview, Mentor 2). A mentor helps him develop as a person into an effective P.E teacher. This is because teacher educators are not so accessible to cater to the student's needs and it becomes easier to ask a senior who the undergraduates look up to as "role models". It is also easier to approach seniors and ask them trivial queries rather than approach teacher educators.

The mentors when they first met the student teachers made it clear that "whenever you need me I am there and you can ask me anything" (Interview, Mentor 2). They tried being approachable and friendly and they "discussed thing beyond lessons" (Interview, Mentor 2). The mentors took interest in helping out the student teachers as they felt that they "could make a difference" (Interview, Mentor 3).

The stakeholders in a student's life agreed that the students require additional help from various sources and how to access them has to be told to them. Due to time constraints and a busy schedule of the teacher educators they are not always accessible. If "student teachers are given importance and listened to" (Interview, Teacher Educator 4), it can help them, another way of approaching this is "getting the Post graduate students into the picture and bridging the gap between the teacher educators and the student teachers" (Interview, Teacher Educator 4).

Since there is a constant change in taught groups, student teachers find it difficult to establish a link with what was previously taught to what is to be taught, so each time they have to set expectations and protocols. So here progression could not be done, so to overcome it, it was suggested to have continuous lessons on the same group to learn how to establish the link (Interview, Teacher Educator 1).

A vast a majority of students have studied in Marathi medium so for them to refer to literature in English poses to be a "mental block" (Interview, Teacher Educator 4) or "barrier" so a lot of time is consumed to translate it.

To be able to execute intra task variation there is a need to have sound content knowledge which can be enriched by writing down activities happening daily (Interview, Teacher Educator 1, 2). For this to be authentic, teacher educators should be trained to "teach

in an ideal way" (Interview, Teacher Educator 1) as students imitate Teacher Educators. The Teacher Educators can also help out by having a "lesson note of the sessions they take daily" (Interview, Teacher Educator 1) which the students can refer to.

The Institution offers a Bachelor's degree program with two main subjects Physical Education and Method Teaching. So half the year is spent on teaching other school subjects, so there is just half a year to learn how to teach Physical Education and this is "completed in a very short span of time" (Interview, Teacher Educator 2).

Due to various difficulties faced by pre service teachers additional help provided to them is important as the "initial/ First year is crucial." So help can be given in the following ways like "ready lesson plans, Literature should be made available in Marathi, ideal videos, consistency and uniformity in teaching by Teacher Educators" (Interview, Teacher Educator 1,2,3,4) as student teachers imitate them. This can be done by "training teacher educators to teach in an ideal way" (Interview, Teacher Educator 1,2). Additional help will include "teaching student teachers to teach/ take class practically" (Interview, Teacher Educator 4).

To make the practice teaching better during peer group teaching, the "students should be encouraged to better themselves and compare themselves with others positively thereby encouraging healthy competition in the group" (Interview, Teacher Educator 4).

In future mentees felt that they can confidently design a warm up activity, select a unit by searching through resources, and can come up with an appropriate lesson.Teacher educators 1, 2, 3 and 4 (Interview) felt that the mentoring program should be for everyone. It should begin at the start of the year. The mentors should be trained post graduate students who have some teaching experience and are students of Pedagogy. Post graduate students need to be more proactive and play an active role in the mentoring program.Studying the mentoring process has the potential to help mentors and mentees work together more explicitly, which could lead to a greater transfer of knowledge and more effective facilitation by the mentors (Zachary, 2000).

Discussion:

Support and assistance programs for beginning physical education teachers are clearly needed (Faust. R,). For the first year student teacher experience to be good he needs additional help, which can be given to him by teaching him and making available resources that will help him ease into his role of being a Physical Education Teacher. Initially hand holding will benefit him, but for this to be an advantage rather than a hindrance the mentoring program should be such where there is a triadic relationship between the Mentor, Mentee and his concerned Teacher Educator. Here the Mentor plays the role of a bridge between the Teacher Educator and the Student Teacher. He acts as a Big brother or Role model for the Student Teacher to look up to. At the start of the Program the Mentee is dependent on the Mentor as he tries to understand how this field works/ the workings of his surroundings. The mentor guides and supports him emotionally/ personally and helps the mentee by pointing him in the right direction, but he cannot impose himself. He just suggests and gives timely inputs, thereby giving the Student Teacher space to learn, to experiment and use his creativity especially during his teaching practicum. At the same time he helps the student teacher professionally by giving timely inputs regarding lesson planning and execution emphasizing on the different aspects of taking a class, familiarising him with behaviours and roles played by the Physical Education Teacher in school. There by leading him towards the role of being an effective teacher. To do this he takes help of additional resources and helps the student

teacher in accessing and using them effectively. Additionally he shares his own past experiences and knowledge there by helping the student teacher establish his own belief systems. For all this to be effective and beneficial for the student teacher a Mentor's suitability and compatibility plays an important role i.e. they need to have similar wavelengths. For mentoring program to be effective the mentor needs to be trained and open minded and the student teachers need to be receptive to ideas and suggestions at the same time assertive. It is a reciprocal relationship. The Teacher Educator oversees the development of the Student Teacher and works with the mentor in the overall development of the Student Teacher. The mentor has to keep in mind that the Student Teacher has a difficult schedule so he has to make life slightly easy and make it a good experience for the Student Teacher especially during his Practice Teaching. Once the relationship has been established the Mentor Mentee Relationship needs to move from dependent mentee to an Independent Mentee (Kram, 1985) who has been groomed to be an effective Physical Education Teacher and is ready to enter the Profession. The researcher had a similar experience in the present research conducted which is similar to previous studies conducted: The beginning physical education teachers in this study stated that they were appreciative of someone with more experience or expertise confirming or providing input for improvement of their teaching. Content knowledge about specific activities and curricular models are needed before teachers can make changes in their programs. The common resource need among these teachers was the need for new knowledge. Betsy demonstrated content knowledge and skills typical of a traditionally aged beginning teacher who has just graduated with a Bachelor's degree. She sought information when she actually needed it to teach a particular lesson (Faust R, 2004). Quick tips provided by the researcher that were easy to immediately implement were more likely to be utilized. The first-year teachers were quite capable of implementing the ideas once they were made aware of some possible solutions to their problems. The beginning physical education teachers in this study stated that they were appreciative of someone with more experience or expertise confirming or providing input for improvement of their teaching. Participants appreciated being directed to resources, as lack of time limited their abilities to locate sources of information and ideas independently. Beginning teachers experience common problems and concerns. Information from this study indicated that there typically was not adequate time in most teachers' schedules to engage in any in depth dialogue or allow for appropriate conferencing about what had occurred during a lesson as even their planning times were often occupied with duties. There are time and feasibility issues associated with the mentoring process. Researchers from previous studies such as Cruz, (1991) Napper-Owen & Phillips, (1995) suggest weekly, or more frequent, observations for mentoring purposes.Utilization of ongoing dialogue with mentors as part of an induction program for support and assistance with improving teaching and student learning may aid retention of quality teachers and help support professional development.The experience from the present research reveals the following:There is an understanding from literature that mentoring is a tool to facilitate change (Griffiths M). Mentoring has the potential to be an effective professional learning strategy. Mentoring relationships change over time.It is a pedagogical& helping process.Mentoring relationship is active and dynamic.Mentoring is a strategy for accelerated learning.Mentoring can benefit both mentors and mentees.The researcher suggests that for the mentoring program to be effective and beneficial for the student teacher, weekly and more frequent observations are a must.

Conclusion:

Mentoring is an effective way for improving the student teacher's teachings skills and has helped them develop holistically. The present study identified the weaknesses of the teacher education program such as short duration of the program, inadequate contact of the teacher educators and the student teachers. It also reveals scarcity of literature in the local language. The study helped the teacher educators to improve the design of one's teaching and being able to show the role model oneself. The study brought along new practices like TPEP, revision in the university syllabus, better ideas of implementation and evaluation. It has also initiated new emergent research projects in the field of pedagogy and teacher development process.

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Role of Foreign Direct Investment in Infrastructural Growth in India

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Abstract:

This paper is studying the concept of foreign direct investment in India. Foreign direct investment plays a vital role in the economic growth of any country. In this paper we tried to analyses the trend of foreign direct investment in India and we have tried to analyses the role of foreign direct investment in the growth of the Infrastructure in the country. This study applies a time based parameter to examine that how sector wise FDI inflows can affect the growth of respective sectors in emerging economy like India. On the basis of finding study suggest that foreign direct investment directly affect the growth of Infrastructure in the host country and FDI plays a very important role in the growth of the Indian economy as well as in the growth of Infrastructure in India.

Keywords: FDI, Foreign Direct Investment, Economic growth, Infrastructural Growth.

FDI & Infrastructure Development:

One of the many areas in which foreign direct investment can benefit a country or any entity, for that matter, is that of development of infrastructure. It has been observed over the years, that a lot of countries as well as other recipients of direct investment from overseas entities have used that money in order to develop the infrastructural facilities at their disposal. All the various types of infrastructure that are at the disposal of a country like health or education, for example, may be benefited by foreign direct investment.

Technological infrastructure is one of the many areas in which foreign direct investment is meant to benefit a country. With the help of foreign direct investment being made in a country the government can construct, as well as, improve the existing technological tools at their disposal. This is also plays a very crucial role in the economic development of a country as this technological advancement assists a country in upgrading its industries and thus helps them to face the challenges of the contemporary global economy.

Foreign direct investment is also capable of upgrading the health infrastructure of a particular country. This could be done by way of providing high-end equipment or medicines. Such investment is normally made by the world level organizations in countries that are economically backward and have no or little medical infrastructure to speak of. For years, the World Health Organization, as well as the World Bank and the International Monetary Fund have been providing a number of the economically backward countries, all over the world and especially in Africa, with money and medicines in order to eradicate critical diseases or improve the medical infrastructure in place. They have also been sponsoring public health awareness programs that make people aware about critical diseases that need to be eradicated. In India, for example, pulse polio and HIV prevention measures have been at the centre of such activities.

Communication infrastructure is an important area where the foreign direct investment can come in handy. The money that is invested in a country by overseas entities can be used for the construction of roads, railways and bridges.

These facilities are used for establishing connections with the remote areas of a country and for transporting important services to these parts like medicines and aids at times of floods or other natural disasters. A lot of construction groups are taking active interest in developing the communicational infrastructure of other countries.

Foreign direct investment is also used for the purpose of educating the unskilled labor force that is present in a country. In India during the later stages of 80s and 90s there was a situation whereby there was a huge labor force but it was mostly unskilled and was employed in the unorganized sector.

It was possible with the help of the financial assistance from the overseas direct investors to train these people so that they may be capable of being recruited into the industry. Foreign direct investment is also useful for executing mass educational programs that can educate those people who remain out of the bounds of conventional and institutional education as they are not able to afford it or it may not be available in their areas.

The transport infrastructure sector is the fastest expanding component of the country's infrastructure sector. India has the second largest road network in the world. An efficient transport infrastructure helps revive the Indian economy and boosts productivity. 100% Foreign Direct Investment (FDI) is allowed under the automatic route in the road and highways sector, subject to applicable laws and regulation.

The overall Balance of Payment reached at Rs.(-) 4471 crores. Inflation reached at its highest level of 13%. Foreign reserves of the country stood at Rs.11416 crores. The continued political uncertainty in the country during this period adds further to worsen the situation. As a result, India's credit rating fell in the international market for both short- term and long-term borrowing. All these developments put the economy at that time on the verge of default in respect of external payments liability.

Review of Literature

It is even more critical for the third-world or developing nations as they find FDI as a solution for all their woes and scarcities. Besides, the coming together of global financial markets has opened up a new avenue to catalyze the growth of FDI across the world. In the early 1980s, the developing countries had drastically eased restrictions on operations of MNEs and FDI inflows. This trend gained even more popularity during the 1990s, which saw a major FDI inflow into the developing countries.

In fact, developing countries received about 40 % global FDI inflows in 1994-96, as compared to 25 % in 1980-84 (United Nations Conference on Trade and Development, UNCTAD 1994). This drift in growing share of developing countries kept on going up till 1999-00, but then went down to 30 % during 2001-02. In India, Foreign investment came into being in the year 1991 under the Foreign Exchange Management Act (FEMA), which was mainly backed by then Finance Minister, Dr. Manmohan Singh. However, once he became the Prime Minister in 2004, it proved to be a major problem. India put restrictions on Overseas Corporate Bodies (OCB) to invest in India. India imposes cap on equity holding by foreign investors in various sectors. Current FDI in insurance and aviation sectors is capped at 49%.

Foreign Direct Investment (FDI) can be understood simply as some kind of investment put in by Multi-NationalCorporations (MNCs) or Multi National Enterprises (MNEs), or by some Non-resident in some kind of company in another country (host /recipient), over which they (investor) have some control, and in lieu, earn private return. A foreign direct investment (FDI) is a controlling ownership in a business enterprise in one country by an entity based in another country. (Financial Times)

Vittorio Daniele and Ugo Marani (2007) in their study, "Do institutions matter for FDI? A Comparative analysis for the MENA countries" analyze the underpinning factors of foreign Direct Investments towards the MENA countries. The main interpretative hypothesis of the study is based on the significant role of the quality of institutions to attract FDI. In MENA experience the growth of FDI flows proved to be notably inferior to that recorded in the EU or in Asian economies, such as China and India. The study suggests as institutional and legal reform are fundamental steps to improve the attractiveness of MENA in terms of FDI.

In terms of share of manufacturing FDI stock in 2006, pharmaceuticals accounted for 35.2 percent compared to electronics (29.7 percent), petroleum (13.2 percent) and chemicals (7.1 percent). In 2007, services' contributions to real GDP and employment were 63.3 and 67.7 percent respectively, while the manufacturing sector accounted for 26.1 and 20.8 percent share for the former and the latter respectively. However, with reference to investment commitments, which include both fixed assets investments and business spending by both local and foreign firms, the manufacturing sector tends to attract the bulk of the total investments as compared to the services industry cluster.

Kojima (1982) clearly indicates that FDI has two directions of impacts on the export of a host country. In the first direction, FDI increases/decreases the export from the host country to source country. FDI increases the export from host country to source country when it has vertical investment. Vertical investment means foreign firms invest aboard to produce intermediate input that will be used in final production in their home country (Helpman, 1984). On the other hand, FDI reduces the export from the host to source country when they establish the full process of production in the host country. As a result, it is not necessary to re-import the intermediated product to the home country. In the second direction, FDI increases/decreases the export from the host country to other countries. FDI increases the export from the host country to other countries when the source country invests in the host country as a production based. In other words, the host country is production platform for foreign investors due to the location advantage, low cost of factors, and availability natural resources. On the other hand, FDI decreases the export from the host to other countries when the export from the host country to source country crowds out the export from the host country to other countries. Many empirical works of the impacts of FDI on the export are discussed at across countries and at the country level.

Research Objectives and Hypotheses Formulation:

In this research paper we have tried to identify the Role of foreign direct investment in Infrastructural Growth in India so our main objectives are:

- To study the trend and pattern of flow of foreign direct investment in India.
- To assess the role of foreign direct investment inflows in economic growth.
- To analyse the impact of foreign direct investment on infrastructural development.

The following hypotheses have been formulated for the research:

- Flow of Foreign Direct Investment shows a positive trend in India.
- Foreign Direct Investment has a positive impact on the overall economic growth of the country.
- Foreign Direct Investment has a positive impact on Infrastructural Growth in India.
- Foreign Direct Investment is a key determinant of infrastructure development in the country.

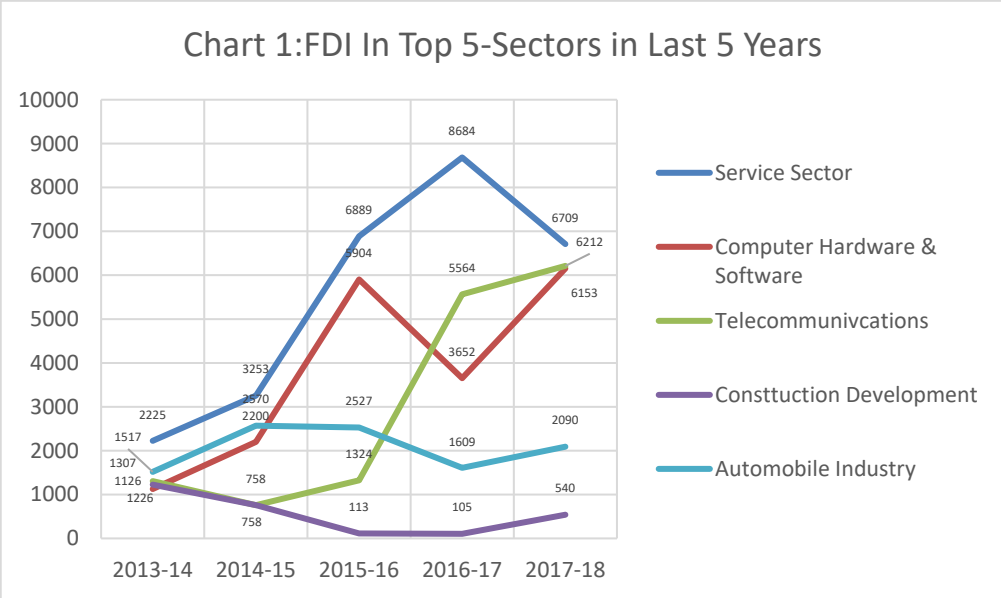
Table 1. FDI Inward & Outward Flows (World), Annual, (1970-2016), Million US$

Year	Inward	Outward	Year	Inward	Outward	Year	Inward	Outward
1970	13257	14141	1986	86697	96777	2002	594929	502477
1971	14241	14433	1987	136869	142002	2003	558864	537857
1972	14760	15729	1988	164228	181983	2004	697170	909347
1973	20366	25934	1989	196939	230913	2005	958516	841092
1974	23871	24426	1990	204905	243878	2006	1411171	1360036
1975	26392	28488	1991	153973	198854	2007	1909234	2176587
1976	21931	28362	1992	162924	203791	2008	1499133	1717456
1977	27044	28687	1993	220110	236281	2009	1190006	1102091
1978	34244	39313	1994	254920	285355	2010	1383779	1386061
1979	41887	62752	1995	341527	356889	2011	1591146	1576041
1980	54396	52091	1996	388819	392306	2012	1592598	1388455
1981	69580	52148	1997	481490	466320	2013	1443230	1399483
1982	58222	27292	1998	690690	679613	2014	1323863	1253159
1983	50393	37705	1999	1076318	1075111	2015	1774001	1594317
1984	56172	50512	2000	1360254	1164956	2016	1746423	1452463
1985	55847	62103	2001	772783	684972			

FDI & Road Development as a Key Element of Infrastructural Development:

Roads are the backbone of the transportation sector in India. Foreign Investment can contribute to economic growth by not only providing foreign capital but also by crowding in additional domestic investment. Technology plays a crucial role in the transport infrastructure sector. FDI results in technological development and the exchange of knowledge and advanced skills.

The government decision to allow 100% foreign direct investment (FDI) in the construction sector fired up a few stocks with higher exposure to the roads business. Coming close on the heels of the ambitious target to lay out 83,000km of roads (including Bharatmala and other plans) by the ministry of road transport and highways, the hope is that the FDI nod would help lure global funds and bidders into the grand plan.



FDI Inflow in Top Five sectors from 2013-18

Although the intent is commendable, there is much to be sorted out beneath the surface in the sector. Demonetization and the goods and services tax may have slowed the pace of execution in 2017, but the average length of roads constructed over the last five years is far below targets.

An analysis by Icra Ltd says that cumulative awards and execution for the last eight years, by the ministry of road transport and highways, was 61,977km and 43,307km, respectively. Going by this measure, 83,000km in the next four years is a tall task.

And this is not without reason. The funding needs are huge. The ministry has started monetizing existing toll roads by awarding them to private firms. Called the TOT (toll-operate-transfer) model, this is expected to bring in part of the funds needed for road development. But critics say that tough bidding norms could slow the pace of monetizing as it would restrict bidders.

According to Prabhudas Lilladher Pvt. Ltd, “While cess was the main source of funds for National Highways Authority of India (NHAI), the funding model is undergoing a change, with the institution supporting project execution through external borrowings."

But balance sheets of firms with good track record are flush with orders up to twice their annual revenue. Hence, they may have little appetite for more. The opportunity for FDI in the sector too is nothing great to write home about as it has already been allowed on a case-to-case basis with approvals.

Meanwhile, land acquisition in huge parcels may slow down the process of awarding itself, given that the new contracting model is to ensure that most of the land is acquired by the government before contracts are awarded.

“Land acquisition cost as a percentage of total project cost for the NHAI projects was at 9% in 2009, increased to 16% in 2012 and; for some of the recent expressway projects, the land acquisition cost is estimated to be in the range of 37-55% of total project cost," says the Icra report.

Besides, a lot depends on the government’s ability to access funds, given its higher degree of involvement in the initial stages of road construction.

That said, road construction companies such as Ashoka Buildcon Ltd, Dilip Buildcon Ltd, Simplex Infrastructures Ltd, IRB Infrastructures Ltd and Sadbhav Engineering Ltd are the front runners that have done well in terms of revenue and profit ramp-up on the back of a robust order book and efficient execution. Yet, shares of these companies have already run up, returning between 35% and 60% in the last six months, thanks to the strong push by the government to the sector.

Valuations are rich at nearly 18-20 times the estimated earnings for fiscal year 2020. Unless profit growth improves by leaps and bounds by better tolling rates and traffic or improved margins in the construction segment, mere news of allowing 100% FDI in the sector will not be a game changer.

Roads are the dominant mode of transportation within India, with the country having one of the largest networks of roads in the world. It totals 4.2 million kilometers and carries almost 90 percent of the country's customer traffic and 65 percent of its freight.

The density of India's highway network, at 0.66 kilometers of highway per square kilometer of land, is similar to that of the United States (0.65) and is much greater than that of China (0.16) or Brazil (0.20). However, most Indian highways are narrow, of poor surface quality and are heavily congested. Furthermore, 33 percent of India's villages do not have access to all-weather roads.

Indian road construction projects have become a lucrative and emerging investment opportunity for numerous international giants. Projects include:

The National Highways Development Project (NHDP): largest highway project ever undertaken by India. Currently being implemented by the National Highway Authority of India (NHAI) with the aim the upgrade and renovate India's major highways.

The Golden Quadrilateral: four-lane pan-India highway ring connecting Mumbai, Delhi, Kolkata and Chennai.

The North-South–East-West (NS-EW) Corridor: four lane expressways which will run from Srinagar in the northwest to Kanyakumani in the south, and from Porbander in the west to Silchar in the east.

These projects will collectively add about 13,000 kilometers of four-lane highways to India's roadways. By 2016, in conjunction with other projects, India will increase its total road network by 66,590 kilometers.

Data Analysis:

Now let us statistically check the significance of the effect of FDI on infrastructure development of roads.

Null Hypothesis H0: There is insignificant effect of FDI equity inflows on Infrastructure Development of roads.

Alternative Hypothesis H1: There is significant effect of FDI equity inflows on Infrastructure development of roads.

Table 2. FDI inflows (in US Million $) & Road Pavement (In Kms) since 2001

Year	Inflow	Road Paved
2001	5478	3373520
2002	5630	3426600
2003	4321	3528654
2004	5778	3621507
2005	7622	3809156
2006	20328	3880651
2007	25350	4016401
2008	47102	4109592
2009	35634	4471510
2010	27417	4582439
2011	36190	4690181
2012	24196	4865394
2013	28199	5231922
2014	34582	4502486
2015	44064	4572144

Source: Transport Research Wing, Ministry of Road Transport and Highways

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.713025563
R Square	0.508405454
Adjusted R Square	0.470590488
Standard Error	414995.8268
Observations	15

ANOVA

	Df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.31544E+12	2.31544E+12	13.44455699	0.002845254
Residual	13	2.23888E+12	1.72222E+11		
Total	14	4.55432E+12			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	3531429.912	206528.4963	17.0989959	2.71644E-10	3085252.222	3977607.602	3085252.222	3977607.602
FDI Inflows	27.59578483	7.526091634	3.666682014	0.002845254	11.33665236	43.8549173	11.33665236	43.8549173

Conclusion:

As Multiple R=0.713 this signifies that FDI and Road Infrastructure are positively correlated. Coefficient of determination, R2, is 50.84% meaning thereby almost 50.84% variation in 'Road Pavement' is explained by FDI inflows. From ANOVA as Significances F <5% indicates rejection of null hypothesis and as coefficient of FDI inflow (27.59578483) is positive and p-value<5% hence we must accept alternative and thus here the conclusion can be made that FDI Inflows have a positive impact on Infrastructure development of Roads.

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