Jurnal Pendidikan Jasmani (JPJ)
Vol. 4, No.2, Desember 2023
ISSN: 2723-2816 (Online)

Shoulder Joint Flexibility of Pointer, Middle, and Shooter Players in Petanque Athletes, State University of Jakarta

Yuliasih[1], Nadya Dwi Oktafiranda[2], Ramdan Pelana[3], Ela Yuliana[4], Sri Indah Ihsani [5]
[1,2,3,4,5] Sports Science Study Program, Faculty of Sports Science, Universitas Negeri Jakarta, Jl. Pemuda No.10 Rawamangun, Jakarta, 13220, Indonesia

Abstract
Pétanque sport is a sport of dexterity in throwing the blindest ball from the iron by getting the target ball closer (pointing) and keeping the opponent's ball away (shooting), and both feet are in a circle. The purpose of this study was to determine the flexibility of the shoulder joint in UNJ pétanque athletes seen from the position of the players, namely pointer, middle, and shooter, and measurements were carried out in the flexion and extension positions. The method used in this study is to use a descriptive method with a measurement technique that measures the flexibility of the shoulder joint. The population in this study was UNJ pétanque players totaling 30 people with a sampling technique namely with accidental sampling technique totaling 24 people. Data collection technique by measuring the flexibility of the shoulder joint using a goniometer. The research was conducted on the 2nd floor of the Biomechanics Lab of GOR UNJ. The results of the study on flexion measurements at the position of pointer players are 187.78°; Middle 201.67° and Shooter 187.78°. While the extension measurement at the pointer position is 83.33°; Middle 84.17° and Shooter 84.44°. The conclusion of this study was obtained Flexion measurements on pointers, middles, and shooters are all in the very good category. Normally 0-180°. The extension measurements on the pointer, middle, and shooter are all in the excellent category. Normally 0-60°. So, pointer, middle, and shooter players have the same physical condition that does not have a significant difference in shoulder joint flexibility.

Keywords: *Flexibility, Shoulder Joint, Pointer, Middle, Shooter, Petanque Athlete*

Correspondence author: Yuliasih, Universitas Negeri Jakarta, Indonesia.
Email: yuliasih@unj.ac.id

Jurnal Pendidikan Jasmani (JPJ) is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

INTRODUCTION

Petanque sport is a sport of dexterity in throwing a ball made of iron by bringing the target ball closer and keeping the opponent's ball away (target) commonly called shooting, and both feet are in a circle. The original form of the sport appeared in 1907 in La Ciotat, in Provence, a city in the south of France when the sport of petanque was played only by French nobles. Through time, petanque has been played by all circles and until now petanque is a sport of achievement that is competed in almost all countries on all continents.

Petanque is a game originating from Provence, France, which has become commonplace in some European countries (Okilanda, 2018). Petanque is played using a ball with a diameter of 70-80 mm and a weight of 650-800g (Laksana et al., 2017). The basic skill of petanque is throwing, where there are 2 (two) types of throwing, namely pointing and shooting. Shooting is a type of throw to drive the opponent's ball away from the target box (Putmwan, 2011). *Shooting* is one of the basic throwing techniques in petanque to drive the opponent's bosi from the target. This technique is necessary when bosi versus dean with boka (Michel Aubert, 2000). The essence of the difficulty level of the shooting technique is also influenced by body position, and foot position that must be stable when the ball delivery is done so that all limbs have good balance (Frederic Nachin, 2013).

Petanque is a unique sport, the tools and fields used are simple, and the way to play is very easy (Sinaga, 2019; Suwanto et al., 2018). The game of petanque is not limited by age, everyone can follow it (Souef, 2015). This game requires concentration and accuracy (Muladana, 2019). Matches with shooting numbers are carried out at distances of 6, 7, 8, and 9 meters. The points obtained in shooting numbers are 0, 3, and 5 in each successful shooting, so this game requires concentration and accuracy to excel.

Pointing is a technique that aims to bring a metal ball or boule closer to a wooden ball (jack). There are three kinds of pointing techniques, namely rolling point, half lobe point, and high lobe point. Shooting is a technique that aims to bring the opponent's metal ball away from the wooden ball (target ball). As with other sports, petanque in addition to mastery of techniques, tactics, and strategies also requires good physical condition (Isknadar et al., 2019). Petanque games do not spend much energy compared to other sports (Irawan, Permana, Akromawati, & Yang-Tian, 2019). But if you look at the activities during the match, the game of petanque emit energy. After each match, athletes must pick up glued iron balls from various distances, ranging from 6, 7, 8, and 9 meters. Then in order to get to the final must go through several matches and in fact petanque matches are carried out in open spaces that give the sun the opportunity to sting the skin. One of the benefits of playing petanque is that it contributes to the physical and mental well-being of people who practice it.

As is well known, when playing petanque or in matches requires a fairly long time, the minimum time used in 1 match is at least 45 minutes. For the PON level, it usually uses a time limit of 1 hour in the preliminary round to the last eighth. For semi-finals and finals, a minimum

of 1.5 hours can even be indefinite. The area of the petanque field for international standards is 4 x 15 meters. In a competition, athletes can check the opponent's bosi several times and determine the landing point. So it takes good endurance and high concentration. However, that ability alone is not enough to support achievement. There are still many biomotor abilities that must be improved along with the improvement of Technique and Tactics Training(Ramdan Pelana, 2020)

Biomotor abilities in athletes are very important, for that it needs to be trained and maintained for maximum results obtained in an activity. The biomotor component consists of 10 aspects, in each sport has different biomotor component characteristics. The same is the case with petanque sports that require high cardiorespiratory endurance to support performance when competing. (Alfarizi & Imansyah , 2022)Flexibility is the ability of joints to perform movements easily without limitations and free from pain in the range of motion. Flexibility relates to good musculotendinous lengthening of the unit (Kisner & Colby, 2007). Meanwhile, according to Flexibility is the ability of tissue or muscle to extend optimally so that the body can move with full range of motion without being accompanied by pain or obstacles. (Wismanto, 2011)

Flexure is usually measured using a fleximeter. There are 2 types of tools to measure flexibility, namely sit and rich flexibility and standing flexibility. However, to measure flexibility in the joints, other tools such as goniometers are needed. Goniometry is used to measure and record the ability to move active and passive joints. The term goniometry comes from two Greek words, gonia which means angle, and metron means measure. Therefore goniometry is related to the measurement of angles, especially the angles produced from joints through the bones in the human body. In petanque, shoulder joint flexibility is needed to help swing the arm better to get the expected throwing results. There are 2 throws in petanque sports, namely shooting throws, which are throw bosi to the opponent's bosi, and pointer throws, which are bosi throws to get close to the target ball (Boka).

Based on several studies that have been conducted, the factor that affects the results of shooting throws is wrist flexion. The research conducted by (Hanief &; Purnomo, 2019) said that there are several determinants of petanque performance, namely height, arm length, arm muscle strength, wrist flexibility, balance, and hand-eye coordination.

Factors that affect flexibility include internal and external factors. Internal factors include anatomy, age (flexibility increases in children and decreases with age), gender (women tend to be more flexible than men because of anatomical structure), weight and psychology. As for external factors that influence include environmental temperature (warm temperatures or above body temperatures are more conducive to increasing flexibility), time (the majority are more flexible in the afternoon than in the morning), the ability of individuals to exercise and restrictions on clothing or equipment used (Kisner & Colby, 2007).

METHOD

The research method used in this study is a descriptive method with measurement techniques, namely measuring the flexibility of the shoulder joint of pointer, middle and shooter players in UNJ pétanque athletes. The population in this study was UNJ pétanque players totaling 30 people with a sampling technique, namely with a*ccidental sampling* technique totaling 24 people. Data collection technique by measuring the flexibility of the shoulder joint using a goniometer. This research was conducted on the 2nd floor of the Biomechanics Lab of GOR UNJ.

RESULTS AND DISCUSSION

Result

Data from the results of shoulder joint measurements can be described in the table below:

Table. 1. Characteristics of Research Samples

Gender	Sum	Age	IMT
Man	12	22	23.18
Woman	12	21.75	20.82

Source: Data Processing Results

Based on Table 1 of the characteristics of the research sample, it can be seen that the number of male samples is 12 people and the female sample is 12 people. With an average age of 22 years for men and 21.75 years for women. The Body Mass Index for men of 23.18 kg / m 2 and the BMI for women of 20.82 kg / m^2. When viewed from age, the average Body Mass Index of the sample

is classified as normal by the table of body mass index categories from the Ministry of Health of the Republic of Indonesia. More details can be seen in the graphic image below:

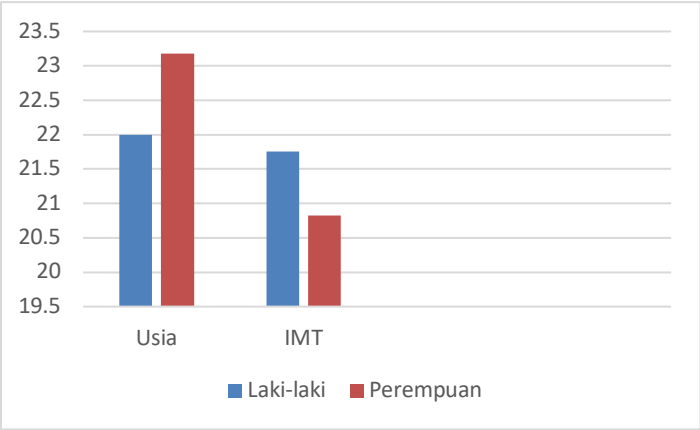

Figure 1. Graph of Research Sample Characteristics

The graph above shows the characteristics of the male and female samples in terms of age and body mass index. Age is not much different between men and women and body mass index is also still in the normal category, namely between 18.5-24 kgm^2.

Table. 2. Description of Flexi and *Extension* Measurement Data *on UNJ Petanque Players (*Pointers, Shooters and Middle*)*

Size	Value					
	Flexi			***Extensions***		
	Pointer	*Middle*	*Shooter*	*Pointer*	*Middle*	*Shooter*
Average	187.78	201.67	195	83.33	84.17	84.44
Minimum	205	230	210	90	95	95
Maximum	175	185	185	80	70	70
St. Dev	9.4	16.93	10.31	4.33	9.70	11.30
Median	185	197.5	190	80	87.50	85

Source: Data Processing Results

Based on the table above, the average flexi measurement result in pointer players is 187.78°; in middle players 201.67° and in shooter players 195°. For extension measurements in pointer players of 83.33°, in middle players 84.17° and shooter players 84.44°. The results of the data can be presented with a chart. The diagram can be seen in the graphic image below:

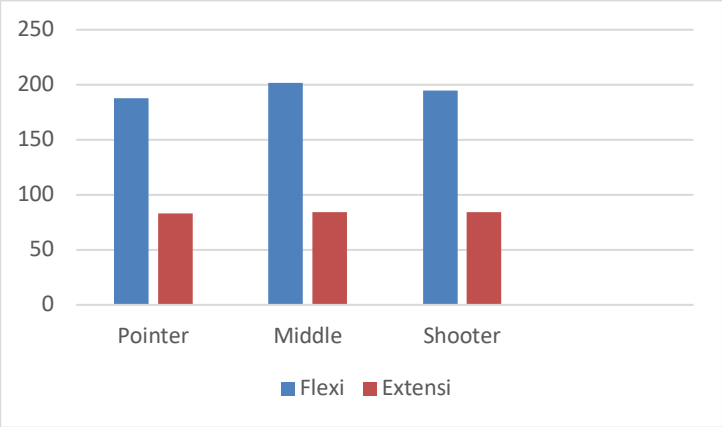

Figure 2. Graph of Flexion and Extension Measurement Results in UNJ Petanque Athletes (Pointers, Middle and Shooter)

The flexibility of the shoulder joint with flexion and extension measurements also did not show significant differences. Based on the results of flexion and extension measurements show good results with normal for flexion, which is 0-180 °, and obtained average results above 180 ° so that it can be concluded that the flexibility of the shoulder joint in flexion conditions is very good. For extensions, the normal is 0-60 ° and the average results are above 80 ° so it can be concluded that the flexibility of the shoulder joint in the extension condition in the category is very good.

Discussion

Based on the results of research conducted by (Nur Istikomah, 2023) those who say that there is a relationship between flexion and extension with shooting results. Regarding flexion and extension when the movement part throws the ball in one motion with the prefix of preparation, throws back and throws forward require good flexibility to be able to control the ball for when throwing the ball backward how far and close the reach is forward and backward.

Another factor that influences shooting in the journal "Evaluation of Petanque Sports Shooting Ability in USK Petanque Club Rampagoe Athletes in 2022" states "to achieve good achievements in petanque sports, especially shooting numbers, there are several factors that affect throwing ability, namely anthropometric factors which include, arm length, togok length, and leg length also influence. In addition to these factors, this shooting number requires elements of physical condition to the athlete's ability to master shooting skills. In addition, the physical

conditions needed are flexibility, accuracy, coordination, flexibility, reaction speed".(Isdarianti et al., 2022)

Another study entitled "The Effect of Arm Muscle Explosive Power, Shoulder Flexion and Self-Confidence on the Shooting Results of Indonesian Petanque Athletes" (Handayani &; Setiakarnawijaya, 2021) stated that the results of the study Shoulder flexion, the ability of joint space is a movement in the joints in a wide range. Flexibility supports the quality that allows a joint segment to move as much as possible according to the possibility of motion (the extent of the joint) so as to allow the muscle or group of muscles to contract in a shortened and longitudinal position to the maximum. The ability to exercise wide space in the joints and have good elasticity of the muscles. Other variables that can affect shoulder flexion are exercise and other biomotor factors. These findings show that to improve athlete performance, an athlete must have arm muscle explosiveness, shoulder flexibility, and good self-confidence, of course, all three of which have an influence in improving athlete performance. Petanque Indonesia. Petanque sports games last a very long time, for that it requires good physical condition. Physical conditions in sports petanque require several elements of physical condition including endurance, strength, speed, flexibility, balance and coordination. Good physical condition will not only improve the ability to move but will also improve the quality of technique and at the same time will increase mental strength.

Based on the journal "*Study Of Correlation Between Power Of The Arm Muscle And Rom (Range Of Motion) Of Shoulder With The Results Of 9 Meters Distance Shooting In Petanque Athlete Faculty Of Sport Science State University Of Jakarta, Indonesia*". In this journal states that there is a relationship between shoulder ROM (Range Of Motion) and shooting skills supported by research data, which means that the better the shoulder ROM (Range Of Motion), the better the shooting skills. In this journal study, ROM measured only the movement part of the extension. Related research discusses the longer the shooting distance can affect the range of the throw with length. For this journal, it strengthens in this study the relationship between shoulder flexibility and shooting results. Based on the journal "Petanque: What are the physical factors determining his achievement?" . Factor analysis in this study is used to compile factors from a set of variables that are considered worthy of analysis. The measurement sub-variables were determined long before the analysis was performed. Anthropometric factors are formed from height, arm length, and palm length, while biomotor factors are formed from arm muscle strength, flexibility, balance, arm muscle power, hand squeeze strength and eye-hand coordination. In addition to

anthropometric and biomotor factors, biomechanical factors also affect the result of the throw because human motion is influenced by biomechanical factors in which to know the ideal angle and torque of the body. The amount of angle and torque when throwing and shooting should also receive more intensive attention, as it is closely related to improving performance and prevention from petanque injuries utilizing height and arm length to swing. Long arms play an important role in the longer distances traveled, as longer levers always have an advantage in throwing. For height and arm length, it does not require a long-range backward and forward, but those that do not have long arms require a long forward and backward reach to arrive and be precise for long-distance shooting.(Saddle et al., 2019) (Hanief &; Purnomo, 2019)

CONCLUSION

The conclusion of this study was obtained Flexion measurements on pointers, middles, and shooters are all in the very good category. Normally 0-180°. The extension measurements on pointer, middle and shooter are all in the excellent category. Normally 0-60°. So pointer, middle and shooter players have the same physical condition that does not have a significant difference in shoulder joint flexibility.

ACKNOWLEDGMENT

Thank you to the UNJ Petanque Club Trustees, athletes, coaches, and all who assisted in this research.

REFERENCES

Alfarizi, L. M., & Imansyah, Y. (2022). *Abdinesia: Jurnal Pengabdian kepada Masyarakat Peningkatan Kemampuan Analisis Komponen Biomotorik Kepada Pemuda Di Lembaga Personal Trainer Lombok Dan Mahasiswa Pjkr Unu NTB*. https://unu-ntb.e-journal.id/abdinesia

Frederic Nachin. (2013). *Petanque Quand Tu Nous Tiens*.

Handayani, A., & Setiakarnawijaya, Y. (2021). Pengaruh Daya Ledak Otot Lengan, Kelentukan Bahu, Dan Percaya diri Terhadap Hasil Shooting Atlet Petanque Indonesia. Jurnal Segar, 10(1), 1–7. https://doi.org/10.21009/segar/1001.01

Hanief, Y. N., & Purnomo, A. M. I. (2019). Petanque: Apa saja faktor fisik penentu prestasinya? *Jurnal Keolahragaan*, *7*(2). https://doi.org/10.21831/jk.v7i2.26619

Isdarianti, N. L., Jafar, M., Masri, M., & Wiyanto, A. (2022). Evaluasi Kemampuan Shooting Cabang Olahraga Petanque Pada Atlet Rampagoe Petanque Club USK Tahun 2022. *Journal of Physical Activity and Sports (JPAS)*, *3*(3), 161–167.

Kisner, C., & Colby, L. A. (2007). Therapeutic Exercise Foundations and Techniques. 4. *FA Davis Company*.

Laksana, G. B., Pramono, H., & Mukarromah, S. B. (2017). Perspektif olahraga petanque dalam mendukung prestasi olahraga jawa tengah. *Journal of Physical Education and Sports*, *6*(1), 36–43.

Michel Aubert, M. (2000). *La Petanque Les Bases De L'Initiation*.

Muladana, A. (2019). *Perbedaan latihan shooting menggunakan penghalang dan tanpa penghalang terhadap peningkatan kemampuan shooting game atlet pemula petanque*.

Nur Istikomah, R. P. Y. (2023). *Hubungan Fleksibilitas Bahu Dengan Hasil Shooting pada Atlet Petanque DKI Jakarta*. Universitas Negeri Jakarta.

Okilanda, A. (2018). Revitalisasi Masyarakat Urban/Perkotaan Melalui Olahraga Petanque. *Halaman Olahraga Nusantara: Jurnal Ilmu Keolahragaan*, *1*(1), 86–98.

Pelana, R., Irfansyah, A. R., & Setiakarnawijaya, Y. (2019). Study of Correlation Between Power of The Arm Muscle and Rom (Range of Motion) of Shoulder With The Results of 9 Meters Distance Shooting in Petanque Athlete Faculty of Sport Science State University of Jakarta, Indonesia. *European Journal of Physical Education and Sport Science*.

Putmwan, B. W. (2011). Petanque The Greatest Game You Never Heard Of Franch. *Franch*.

Ramdan Pelana, A. S. H. C. I. S. (2020). *Teknik Dasar Bermain Olahraga Petanque* (Vol. 1). PT RajaGrafindo Persada.

Sinaga, F. S. G. (2019). Analysis biomechanics pointing dan shooting petanque pada atlet TC PON XX PAPUA. *Jurnal Sains Olahraga*, *3*(02), 66–75.

Souef, G. (2015). The winning trajectory. *Malaysia: Copy Media*.

Suwanto, W., Kristiyanto, A., & Doewes, M. (2018). Development of petanque sport in Central Java Province. *Journal of Education, Health and Sport*, *8*(11), 194–198.

Wismanto, W. (2011). Pelatihan Metode Active Isolated Stretching Lebih Efektif Daripada Contract Relax Stretching dalam Meningkatkan Fleksibilitas Otot Hamstring. *Jurnal Fisioterapi*, *11*(1).