

The Influence of Arm Muscle Strength, Hand Eye Coordination and Concentration on the Free Trow Ability of Binuang Sakti Basketball Athletes in Sijunjung Regency

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Abstract. The aim of this study was to analyze the effect of arm muscle strength, eye-hand coordination and concentration on the free throw ability of the Binuang Sakti basketball athletes in Sijunjung district. This research is a type of path analysis research. This research was carried out in the Sibinuang Sakti Basketball Court, Sijunjung Regency. The population comes from all basketball athletes in Sijunjung Regency totaling 41 people. The samples came from basketball athletes, totaling 26 people. The sampling technique in this research is purposive sampling. The data analysis technique was descriptive statistical analysis using SPSS version 16. The results showed that there was a significant effect of arm muscle strength, eye-hand coordination and concentration on the free throw ability of basketball athletes in Binuang Sakti, Sijunjung district.

Keywords: Arm Muscles, Health and Physical Education, Hand Eye Coordination, Free Trow

Abstrak : Penelitian bertujuan untuk menganalisis Pengaruh Kekuatan Otot Lengan, Koordinasi Mata Tangan dan Konsentrasi Terhadap Kemampuan Free Trow Atlet Bola Basket Binuang Sakti Kabupaten Sijunjung. Penelitian ini merupakan jenis penelitian path analisis. Penelitian ini dilaksanakan dilapangan basket GOR Sibinuang Sakti Kabupaten Sijunjung. Populasi berasal dari seluruh atlet bolabasket Kabupaten Sijunjung berjumlah 41 orang. Sampel berasal dari atlet bola basket yang berjumlah 26 orang. Teknik pengambilan sampel dalam penelitian adalah purposive samplig. Teknik analisis data adalah analisis statistik deskriptif dengan SPSS versi 16. Hasil penelitian menunjukkan bahwa adanya pengaruh signifikan Kekuatan Otot Lengan, Koordinasi Mata Tangan dan Konsentrasi Terhadap Kemampuan Free Trow Atlet Bola Basket Binuang Sakti Kabupaten Sijunjung.

Kata kunci: *Otot Lengan, Pendidikan Jasmani dan Kesehatan, Koordinasi Mata Tangan, Free Trow.*

INTRODUCTION

The industrial revolution 4.0 in the world of education has experienced very significant progress in the world of education (Katyudo & de Souza, 2022; Oktarina et al., 2021; Suharyat et al., 2022). Education helps students in developing their potential (Ichsan et al., 2022; (Işık & Zorba, 2020). Physical and health education helps students to be more active and interesting in learning to develop their potential (Asmi et al., 2018; Gumara & Wahyuri, 2022). Potential development in students can be done with active sports. Exercise is a natural way to train muscle agility in the body (Wulandari et al., 2011; Oktarifaldi et al., 2019). In addition, exercise in helping the body become healthier (Rifki & Dewanti, 2018). However, sport is an arena for achievement, so it needs coaching.

Sports coaching must be planned, structured and sustainable, so that the expected results can be achieved in a maximum way (Wati et al., 2020). As stated in Law (UU) No. 11 of 2022 concerning the National Sports Management System article 1 paragraph 12 which states that: Achievement Sports are Sports that foster and develop athletes in a planned, systematic, integrated, tiered and sustainable manner through competition to achieve achievements with the support of sports science and technology.

One sport that regularly conducts training in the community both from the central and regional levels is basketball (Raharjo et al., 2016). The development of basketball in Indonesia has grown rapidly. This can be seen from the large number of people who are interested in taking part in training at basketball clubs (Idham et al., 2022). Basketball enthusiasts are not only limited to certain ages, but have been carried out by various age levels, children, adolescents, adults to parents (Taufik et al., 2020)

Furthermore, the development of basketball at this time has been evenly distributed throughout Indonesia, one of which is in West Sumatra. West Sumatra has conducted coaching for basketball athletes from children to adults who are in the Regency and City. One of the regencies in West Sumatra that routinely conduct training is Sijunjung Regency. The training conducted in Kab. Sijunjung has been very good, as seen from the many existing clubs and basketball self-development activities in schools.

Based on the observations that the researchers saw, the achievements of the basketball athletes in Kab. Sijunjung is good. It can be seen from the various events / championships participated in by Kab. Sijunjung often wins, ranking 1st, 2nd and 3rd. The athlete's posture is quite ideal as a basketball player, but when doing free throws he often fails to score, because the shot doesn't go into the ring, some don't even touch the ring. . The chance to add points from this free throw in one match is estimated at only 30%. In every match that is participated in by the District Basketball athletes. Sijunjung had many opportunities to shoot free throws. However, the district athlete Sijunjung was unable to maximize the free throw opportunity he had obtained. Previous research by (Sawiya et al., 2022) states that muscle strength has a positive influence on the ability to throw shoot in basketball. Research by (Adityo Agustiawa, 2020) menyatakan kekuatan otot, koordinasi mata dan percaya diri memberikan pengaruh signifikan terhadap shooting free throw pada atlet bola basket. Menurut (Nurfatoni & Hanief, 2020) stated that hand eye coordination affects the muscles in giving shooting shots. Based on these problems, this study aims to analyze the effect of arm muscle strength, hand-eye coordination and

concentration on the free throw ability of Binuang Sakti basketball athletes in Sijunjung district.

RESEARCH METHOD

This research is a type of path analysis research. Pat analysis research is a type of correlation development research that is broken down into several interpretations of the consequences it causes. This research was carried out in the Sibinuang Sakti Basketball Court, Sijunjung Regency. The population comes from all basketball athletes in Sijunjung Regency totaling 41 people. The samples came from basketball athletes, totaling 26 people. The sampling technique in this research is purposive sampling. The data analysis technique is descriptive statistical analysis with SPSS version 16.

RESULT AND DISCUSSION

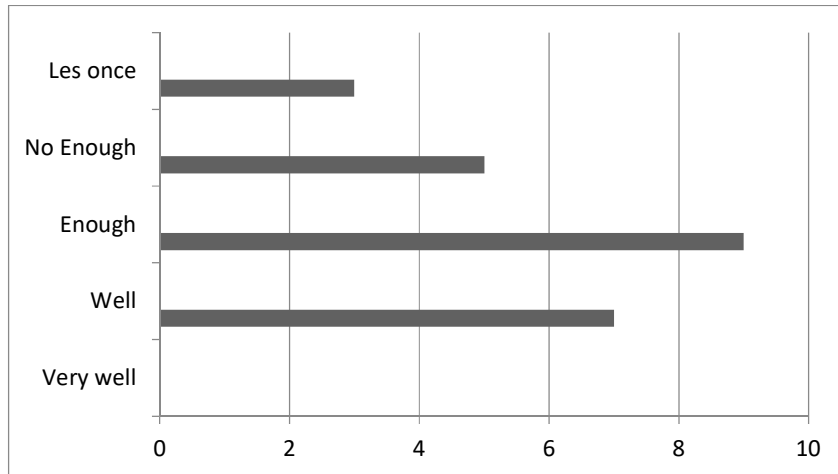
Result

From the results of research that has been done on the Effect of Arm Muscle Strength, Hand Eye Coordination and Concentration on the Free Trow Ability of Binuang Sakti Basketball Athletes in Sijunjung Regency in full can be seen in table 1.

Table 1. Frequency Distribution of Arm Muscle Strength

No	Value	Frequency		Clasification
		Absolute	Relative (%)	
1	55,75 >	1	4%	Very well
2	48,53 – 55,74	7	28%	Well
3	41,31 – 48,54	9	36%	Enough
4	34,09 - 41,32	5	20%	Not Enough
5	> 34,08	3	12%	Less Once
Jumlah		25	100%	

Furthermore, for more details, the data on the results of the arm muscle strength test can be seen in the image below.

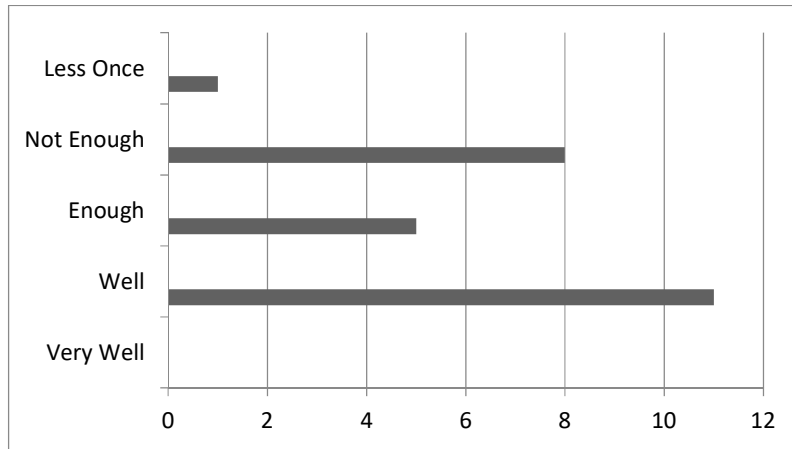


Picture. 1. Arm Muscle Strength Histogram

Based on Figure 1, the data shows the arm muscle strength of basketball athletes, 1 person in the very good category, 7 people in the good category, 9 people in the moderate category, 5 people in the poor category and 3 people in the category very less than 25 participants. Not only that, the hand eye coordination of the athletes can be seen in table 2.

Table 2. Frequency Distribution of Hand Eye Coordination

No	Value	Frequency		Clasification
		Absolute	Relative (%)	
1	8,12 >	0	0%	Very well
2	6,79 – 8,11	11	44%	Well
3	5,45 – 6,78	5	20%	Enough
4	4,12 - 5,44	8	32%	Not Enough
5	> 4,11	1	4%	Less Once
Total		25	100%	

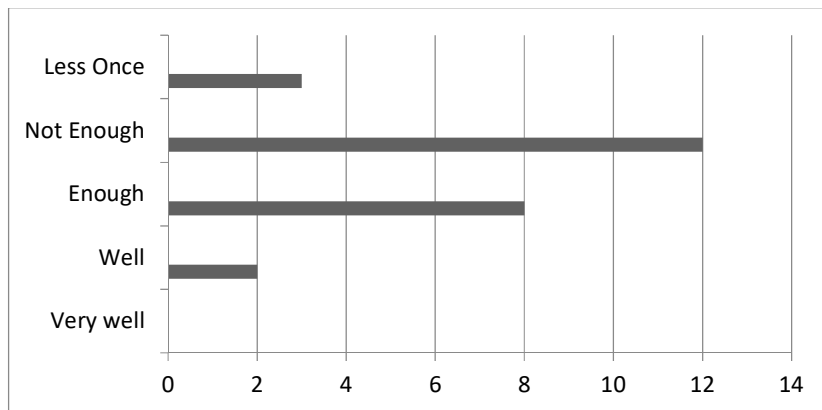


Picture. 2. Hand Eye Coordination Histogram

Based on Figure 2. The frequency distribution of hand eye coordination obtained the highest score of 11 people in the good category, 5 people in the enough category, 8 people in the less category and 1 person in the very less category. Furthermore, basketball athlete concentration data can be seen in table 3.

Table.3 Concentration Frequency Distribution

No	Value	Frequency		Classification
		Absolute	Relative (%)	
1	21 >	0	0%	Very well
2	16 – 20	2	8%	Well
3	11 – 15	8	32%	Enough
4	6 - 10	12	48%	Not Enough
5	> 5	3	12%	Less Once
Jumlah		25	100%	

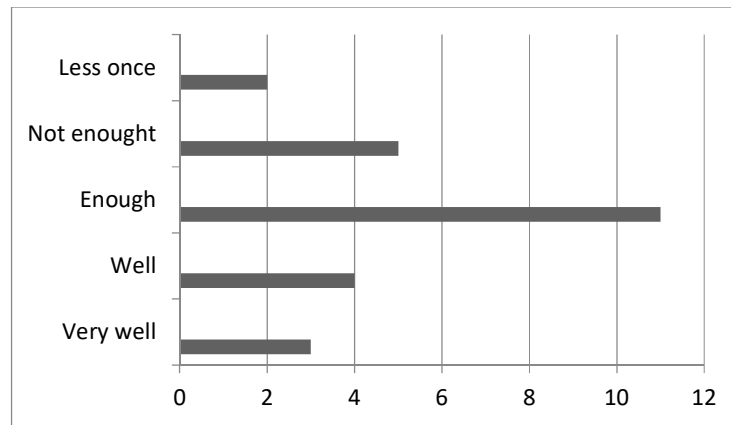


Gambar 3. Histogram Konsentrasi Atlet Bola Basket

Based on Figure 3. Shows the concentration of basketball athletes consisting of 2 people in the good category, 8 people in the moderate category, 12 people in the less category and 3 people in the very good category. In addition, this study also looks at the free throws of athletes in basketball games. So, data on the results of basketball free throws can be seen in table 4.

Tabel 4. Distribusi Frekuensi *Free Throw*

No	Value	Frequency		Clasification
		Absolute	Relative (%)	
1	8,97 >	3	12%	Very well
2	7,39 – 8,96	4	16%	Well
3	5,81 – 7,38	11	44%	Enough
4	4,23 - 5,80	5	20%	Not Enough
5	> 4,22	2	8%	Less Once
Total		25	100%	



Gambar 4. Histogram *Free Throw*

Based on Figure 4, it shows that the free throw basketball athletes consist of 3 very good categories, 4 good categories, 11 moderate categories, 5 poor categories and 32 very poor categories. Therefore, Arm Muscle Strength, Hand Eye Coordination and Concentration have a significant influence on the Free Trow Ability of Binuang Sakti Basketball Athletes in Sijunjung Regency. It can be seen that the results of the ANOVA test obtained the value of Rsquare = 0.926 or the sig value. $0.000 < 0.05$ then H_a is accepted.

Discussion

Arm muscle strength provides great power in the game of basketball. In the game of basketball, the ability of the arm muscles to provide considerable physical strength (Chien et al., 2009). This is in line with (Kaswan et al., 2021) stated that the strength of the arm muscles has a big influence in the game of basketball, especially in shooting.

Furthermore, (Alnova et al., 2022) explains the ability of the arm muscles to have a positive influence on the ability of penalty shots (free throws) in basketball games (Vine et al., 2014). The game of basketball strength of muscle power helps basketball athletes to be able to drive the ball to their partners.

(Samsudin, 2022) Arm muscle strength provides energy for basketball athletes to be more agile in dribbling the ball. So, with the strength of the arm muscles, you can increase your agility in dribbling the ball. The game of basketball is a big ball game that requires a lot of muscle energy. Not only that, the game of basketball also requires hand eye coordination. The eye of the hand has enormous benefits in movement activities in sports. Hand eye coordination has a big influence on the ability in free throws of Binuang Sakti basketball athletes in Sijunjung Regency. This is in line with (Murdhani et al., 2014) states that learning hand eye coordination has a big influence in free throw basketball. In research (Adityo Agustiawa, 2020) states that there is a significant influence between the strength, eye and confidence of basketball athletes on the results of shooting free throws.

Next (Rahayu et al., 2017) stating the ability of the eye of the hand is also able to provide great strength in dribbling a basketball. Not only that, eye-arm coordination is able to help athletes with accuracy in shooting basketball (Hermawan & Rachman, 2018). In addition, in the game of three throw basketball and concentration have a very important role. Concentration is needed in the game of basketball. This is because concentration has a very large influence on the ability of free throws in basketball. This is in line with research (Hasbi et al., 2021) states that there is an influence of concentration on the ability to shoot (free throw) in basketball games. Apart from that according to (Yanti & Jannah, 2017) stated that concentration in playing basketball affects the physical abilities and techniques of basketball athletes. Therefore, athletes must routinely perform physical or technical exercises in order to get optimal results (Candra, 2019).

Conclusion

From the results of this study it can be concluded that there is a significant influence of Arm Muscle Strength, Hand Eye Coordination and Concentration on the Free Throw Ability of Binuang Sakti Basketball Athletes in Sijunjung Regency.

Reference

- Paulus A. Buya, 2Doortje Tamunu, 3Frederik Dj. Sumarauw. (2021). Jurnal Ilmu Kesehatan Olahraga. *Jurnal Ilmu Kesehatan*, 2(1), 296–305. www.stikes-khkediri.ac.id
- Adityo Agustiawa. (2020). Pengaruh Kekuatan, Koordinasi Mata Tangan dan Percaya Diri Terhadap Hasil Shooting Free Throw Atlet Bola Basket Palembang. *Jurnal Olympia*, 5994(2), 17–26.
- Asmi, A., Neldi, H., & FIK-UNP, K. (2018). Meningkatkan Minat Belajar Siswa Dalam Pembelajaran Pendidikan Jasmani Olahraga Dan Kesehatan Melalui Metode Bermain Pada Kelas Viii-4 Sekolah Menengah Pertama Negeri 2 Batusangkar. *Jurnal MensSana*, 3(1), 33. <https://doi.org/10.24036/jm.v3i1.64>
- Candra, O. (2019). Contribution of Leg Muscle Explosive Power and Flexibility on Lay-Up Shoot in Basketball. *Advances in Social Science, Education and Humanities Research*, 278, 479–482. <https://doi.org/10.2991/yishpess-cois-18.2018.121>
- Chien, C. W., Brown, T., & McDonald, R. (2009). A framework of children's hand skills for assessment and intervention. *Child: Care, Health and Development*, 35(6), 873–884. <https://doi.org/10.1111/j.1365-2214.2009.01002.x>
- Hasbi1, L. M. Y. I. (2021). PENGARUH MENTAL TRAINING DAN KONSENTRASI TERHADAP KEMAMPUAN SHOOTING (FREE THROW) DALAM PERMAIANAN BOLABASKET. *IJERT: Indonesian Journal of Education Research and Technology*, 1(1), 10–17.
- Hermawan, D. A., & Rachman, H. A. (2018). Pengaruh pendekatan latihan dan koordinasi mata tangan terhadap ketepatan shooting peserta ekstrakurikuler basket. *Jurnal Keolahragaan*, 6(2), 100–109. <https://doi.org/10.21831/jk.v0i0.20349>
- Ichsan, Suhaimi, Amalia, K. N., Santosa, T. A., & Yulianti, S. (2022). Pengaruh Model Pembelajaran Problem Based Learning Berbasis TPACK Terhadap Keterampilan Literasi Sains Dalam Pembelajaran IPA Siswa Tingkat SD Sampai SMA: Sebuah Meta-Analisis. *Jurnal Pendidikan Dan Konseling*, 4(5), 2173–2181.
- Idham, Z., Neldi, H., Komaini, A., Sin, T. H., & Damrah, D. (2022). Pengaruh Kebugaran Jasmani, Status Gizi, dan Motivasi Belajar terhadap Hasil Belajar PJOK. *Jurnal Basicedu*, 6(3), 4078–4089. <https://doi.org/10.31004/basicedu.v6i3.2196>
- Işık, M., & Zorba, E. (2020). The effects of hemsball on the motor proficiency of students with intellectual disabilities. *International Journal of Developmental Disabilities*, 66(2), 104–112. <https://doi.org/10.1080/20473869.2018.1488534>
- Joese Alnova, Syafrial, D. (2022). PENGARUH LATIHAN KEKUATAN OTOT LENGAN TERHADAP KEMAMPUAN TEMBAKAN HUKUMAN (FREE THROW) DALAM BOLA BASKET PUTRA CLUB BASKET TUNAS PENDAHULUAN Bola basket merupakan salah satu cabang olahraga yang sangat terkenal di kalangan dunia . Olahraga ini juga bany. *Sport Gymnastics: Jurnal Ilmiah Pendidikan Jasmani*, 3(1), 120–129. <https://doi.org/10.33369/gymnastics>
- Katyudo, K. K., & de Souza, R. A. C. (2022). Digital Transformation towards Education 4.0. *Informatics in Education*, 21(2), 283–309. <https://doi.org/10.15388/infedu.2022.13>
- Murdhani, G. W., Sugiharto, & Soekardi. (2014). Pengaruh Metode Pembelajaran Dan Koordinasi Mata Tangan Terhadap Hasil Free Throw Bola Basket Siswa Putra Smk Negeri 1 Tengaran Kabupaten Semarang. *Journal of Physical Education and Sports*, 3(1), 28–32.
- Nurfatoni, A., & Hanief, Y. N. (2020). Petanque: dapatkan koordinasi mata tangan,

- flexibilitas pergelangan tangan, fleksibilitas togok dan keseimbangan memberi sumbangan pada shooting shot on the iron? *Journal of Physical Activity (JPA)*, 1(1), 10–20.
- Purnama Yanti, S. (2017). Pengaruh Mind Control Training Terhadap Mental Toughnes Pada Atlet Ukm Bola Basket Universitas Negeri Surabaya. *Character: Jurnal Penelitian Psikologi.*, 4(1), 1–6.
- Rahayu, P., Rahayu, T., Rc, A. R., Ungaran, S. M. A. N., & Tengah, J. (2017). Pengaruh Gaya Mengajar Latihan dan Koordinasi Mata Tangan terhadap Hasil Pembelajaran Dribbling Bola Basket. *Journal of Physical Education and Sports*, 6(2), 186–192.
- Rifki, M., & Dewanti, R. (2018). Phylogenetic Study of Black and Brown Japanese Quails in Indonesia Based on Mitochondrial D-Loop Sequence. *Journal of Animal Breeding and Genomics*, 2(4). <https://doi.org/10.12972/jabng.20180038>
- Samsudin, S. (2022). Pengaruh Kelincahan dan Kekuatan Otot Lengan terhadap Kemampuan Menggiring Bola dalam permainan bola basket Pada siswa Ekstrakurikuler SMP Negeri 3 Belo. *Jurnal Pendidikan Olahraga*, 12(1), 11–16.
- Sawiya, nadira mifta. (2022). Pengaruh Kekuatan Otot Tungkai, Koordinasi Mata-Tangan Dan Konsentrasi Terhadap Kemampuan Free Throw Shoot Pada Atlet Bolabasket Putera Bengkulu Selatan. *Jurnal Stamina*, 5(April), 149–164.
- Taufik, A. R., Ma'mun, A., & Mulyana, M. (2020). Dampak Shooting Three Point Plyometric dan Ladder terhadap Hasil Shooting Three Point Bola Basket. *Gelandang Olahraga: Jurnal Pendidikan Jasmani Dan Olahraga (JPJO)*, 3(2), 197–212. <https://doi.org/10.31539/jpjo.v3i2.1302>
- Tri Ayun Wulandari. (2011). Pengaruh model pembelajaran deduktif, induktif dan kemampuan dasar terhadap peningkatan kebugaran jasmani. *Upaya Meningkatkan Keterampilan Passing Bawah Bola Voli Dengan Menggunakan Model Pembelajaran Student Teams Achievement Division*, 1(1), 1–9.
- Vine, S. J., Moore, L. J., & Wilson, M. R. (2014). Quiet eye training: The acquisition, refinement and resilient performance of targeting skills. *European Journal of Sport Science*, 14(SUPPL.1), 37–41. <https://doi.org/10.1080/17461391.2012.683815>
- Wati, A. K., Dewanti, R., Fadilla, P., Rifki, M., & Cahyadi, M. (2020). Exterior quality of Japanese quails egg from brown and black japanese quail crosses. *IOP Conference Series: Earth and Environmental Science*, 411(1). <https://doi.org/10.1088/1755-1315/411/1/012031>