Jurnal Aisyah: Jurnal Ilmu Kesehatan

Volume 8, Issue 1, March 2023, p. 93–100
ISSN 2502-4825 (print), ISSN 2502-9495 (online)

Fetal Reposition Using Ball Throwing Biomechanics and Body Mechanics for Pregnant Women

Wita Asmalinda*), Nurul Komariah

[1] Health Polytechnic of the Ministry of Health, Palembang, Indonesia

ARTICLE INFO

Article history:

Received 10 October 2022
Accepted 31 January 2023
Published 20 March 2023

Keyword:

Biomechanics
Throw ball
Mechanical body,
Fetal reposition

A B S T R A C T

The risk to the mother and fetus will be increased in the case of a breech presentation than if the fetus is in a cephalic presentation. Intrauterine fetal repositioning is also influenced by physical forces acting on the fetus and uterus. This study aimed to determine the effect of the biomechanics of throwing the ball and body mechanics on the repositioning of the fetus in pregnant women. This type of research is an experimental study of benefit testing, with no comparison group (pre-test and post-test without control group design). This research was conducted in 5 Midwife Independent Practice Places in Palembang City for seven months. The length of treatment is for 14 days. The research sample was 30 third-trimester pregnant women with breech presentation, who met the inclusion and exclusion criteria. The statistical analysis used in this study is the Mc test. Nemar. There was a significant effect on fetal repositioning before and after treatment with ball-throwing biomechanics and body mechanics with a p-value of 0.0001. It was concluded that the biomechanics of throwing the ball and body mechanics affected the repositioning of the fetus from breech presentation to head presentation.

Kata kunci:

Biomekanika
lempar bola
body mekanik,
reposisi janin

**) corresponding author*

Wita Asmalinda, SST., M.Kes

Faculty of Midwifery
Jl H.M.Saleh Perumahan Alam Raya
residence Blok E1 no 14 Kec. Sukarami
Palembang-Indonesia 30153

Email: wita_asmalida@yahoo.co.id

DOI: 10.30604/jika.v8i1.1893

A B S T R A K

Resiko terhadap ibu dan janin akan mengalami peningkatan pada kasus presentasi bokong dibandingkan jika janin berada pada presentasi kepala. Reposisi janin intra uterin dipengaruhi juga oleh gaya fisik yang bekerja pada janin dan uterus. Tujuan penelitian ini adalah untuk mengetahui pengaruh biomekanik teknik lempar bola dan body mekanik terhadap reposisi janin pada ibu hamil. Jenis penelitian ini adalah penelitian eksperimental uji manfaat, dengan tanpa kelompok pembanding (pre-test and pos-test without control group design). Penelitian ini dilakukan di 5 Tempat Praktik Mandiri Bidan Kota Palembang selama 7 bulan. Lama perlakuan adalah selama 14 hari. Sampel penelitian adalah 30 ibu hamil trimester tiga dengan presentasi bokong, yang memenuhi kriteria inklusi dan eksklusi. Analisis statistik yang digunakan pada penelitian ini adalah uji Mc. Nemar. Ada pengaruh yang signifikan terhadap reposisi janin sebelum dan setelah diberikan perlakuan biomekanika lempar bola dan body mekanik dengan nilai P-value sebesar 0.0001. Disimpulkan bahwa Biomekanika lempar bola dan Body mekanik berpengaruh terhadap reposisi janin dari presentasi bokong menjadi presentasi kepala.

INTRODUCTION

Vaginal delivery is a God-given nature for every woman. A normal birth canal makes it easy for mothers to give birth to their babies. After normal delivery, the mother and baby can recover as usual without experiencing significant complications (Lubis, D. S., 2018; Berhan, Y., 2016). Medical indications in the form of childbirth complications place the mother to choose alternative births so that the fetus can be born safely. In the Regulation of the Kementerian Kesehatan (PMK) number 79 (2014), one case handling and follow-up is an abnormality in the position of the fetus in the third trimester. Fetal position abnormalities that commonly occur are the location of the buttocks ranging from 3-4% (Nurdiyana, S., 2020) Before 28 weeks of gestation, the incidence of breech presentation ranges from 25-30%, and most will turn into cephalic presentations after gestational age 34 weeks. (Wardhana, E., 2017; Zulaikha, 2017; Saifudin, 2008; Silinaung, 2014). The risk to the mother and fetus will increase in cases of breech presentation compared to if the fetus is in cephalic presentation (Nurdiyana, S., 2020) Delivery with breech presentation has a correlation with increased perinatal mortality and morbidity (Wardhana, E., 2017; Widia, 2017). 2017; Harjanti, 2017; Pramana, C. 2020). Handling breech presentation during pregnancy is aimed at preventing malpresentation at the time of delivery (Wardhana, E., 2017; Zulaikha, L.I. 2017).

The presentation of the fetus in the uterus is very dependent on the process of adaptation of the fetus to the intra-uterine space. At a gestational age of fewe than 28 weeks, the fetus is still relatively small in occupying the intrauterine volume so that the fetus can to rotate from head presentation to breech presentation or vice versa with relatively transverse movements (DeCherney, 2013; Wardhana, E., 2017). It correlates with increasing gestational age and increasing fetal weight, which results in a decrease in fetal mobilization to perform rotational movements. The factor that supports fetal rotation mobilization are the volume of amniotic fluid (amnion). Amniotic fluid volume is relatively more in pregnancy up to 32 weeks. thus providing an opportunity for the fetus to be able to move, and rotate freely. Therefore the fetus can place itself in a cephalic presentation, breech presentation, or transverse position (DeCherney, 2013; Wardhana, E., 2017).

According to Wardhana (2017), intrauterine fetal repositioning is also influenced by physical forces acting on the fetus and uterus, including gravity, buoyancy, and friction. The force of gravity on the fetus acts on almost all parts of the fetal body, with different strengths based on the density and mass of the fetal body parts. The force of gravity of the fetus can to push the movement of the fetus downwards. The path of action and the center of gravity are determined by separating the sum of the force vectors from the particles of the fetal mass. Different things happen to the buoyant force, which acts in the opposite direction to the fetal gravity.

The fetus in the amniotic fluid floats with force proportional to the weight of the displaced amniotic fluid (displacement fluid). The buoyant force due to the displaced fluid exerts a force on the body. A single force acting transversely (transversely) about the axis of rotation provides a torque or impetus to rotate. The two forces acting in opposite directions about the axis of rotation of the fetus result in the merging of forces. When the combination of gravity and buoyancy acts on the fetus, it is assumed that there is a potential for the fetus to be able to rotate. Amniotic fluid supports the buoyancy of the fetus, presumably, this is what allows temporary separation of the fetus from the uterine wall. The fetal rotation has the potential to occur due to weight imbalance and unidirectional buoyancy (DeCherney, 2013; Wardhana, E., 2017; Sutrisminah, F., 2017).

Friction is a force that acts on both surfaces of objects that touch each other. Because the position of the fetus is pulled backward- from posterior to anterior to the uterine fundus- the frictional force generated will oppose fetal movement (DeCherney, 2013; Wardhana, E., 2017; Zulaikha, L.I. 2017). Static friction occurs on both surfaces of objects that tend to be relatively stationary. The frictional force exerted on the fetus when it is rotated downwards on an inclined plane. If the resulting frictional force impedes the fetus's intrauterine rotation, motion induction is recommended. Because the actual force due to friction decreases immediately after fetal displacement, continuous agitation is required to maintain fetal displacement until rotation is achieved. If the obstruction prevents fetal rotation, agitation can cause the protruding part of the fetus to be pulled or separated from the uterine wall resulting in rotation (DeCherney, 2013; Wardhana, E., 2017; Zulaikha, L. I., 2017).

In cases where the surface of the uterus or fetus is very heavy or the pressure is so great that there is strong resistance to fetal displacement, fetal rotation can be maximized by pushing movements. The thrust generated must be greater than the frictional force. Push force is also required for relatively difficult fetal repositioning, where the fetal center of gravity is proportional to the center of buoyancy and agitation does not change the center of gravity shift significantly (Potter & Perry, 2011; Paryono, 2012; Wardhana, 2014; Zulaikha, L. I., 2017).

According to Wardhana, E (2017) Interventions carried out in third-trimester pregnant women using the principles of body mechanics and maternal body alignment have been shown to be able to change the presentation of the buttocks to the presentation of the head. In normal pregnancy, the fetus with breech presentation occurs after gestational age above 24 weeks. Biomechanics uses the principles of physical laws and techniques to describe motion in bodies and understand the effects of forces and moments on kinetic bodies. The biomechanics of the throwing ball technique is an induced movement using a thrust intervention on an inclined surface using the center of gravity of the mother and fetus (Puspita, L and Ernawati, 2020; Fitria, 2021).

Topographical medical diagnostic support tools commonly used for monitoring the condition of the intrauterine fetus, the development of pregnancy, and preparation for childbirth are ultrasound (USG). This medical device uses the physical principle of ultrasound emitted by a transducer, with a frequency of 1-15 MHz (Mappaware NA, et al. 2020). By utilizing the concept of sound reflection, when the sound is fired towards the organs of the body, the large organs will reflect the sound with large and small reflection coefficients, which in turn will produce an image or image (Mappaware NA., et al. 2020). Ultrasound is highly recommended for fetal examination, after all, it has been proven to have a beneficial test, namely non-destructive testing because it uses high-frequency sound waves that the human ear cannot hear so it is safe to use. (Newsletter, Integra. 2016; Mappaware NA, et al. 2020).

The biomechanical examination is a process of analyzing lower limb function. This is done to determine the abnormality and recognize how the body compensates for the body's non-conformance. The asymmetrical body shape that is visible in the legs and feet affects how to walk or

stand (Suhartoyo, 2020). The legs feel tense for a long time because they are holding too much weight so their gait and posture become irregular. Body activities that are more dominant using one side of the body, rather than the other side of the body, allow for imbalances in the musculoskeletal system and nervous system. Changes in the musculoskeletal systems in pregnant women, especially in the pelvic bones, will at least influence on the maternal uterine system. Body mechanics is a term used to describe the safe, efficient, and coordinated use of the body to move objects and perform activities of daily living. The main purpose of body mechanics is to facilitate the use of the right muscle groups safely and efficiently to maintain balance and be able to reduce the risk of injury (Wahyuni, N., 2017; Wijaya, A., 2017; Wardhani, U.C., 2018; Rahayu, N.A.P, 2020; Danang, AS., 2018; Dewi, HN., 2019).

Research related to the repositioning of the buttocks using the biomechanics of the ball throwing technique and body mechanics applied to pregnant women with the fetus in the breech position has never been conducted in similar studies, therefore it is necessary to the research to determine the biomechanical effects of using ball throwing techniques and body mechanics on the reposition of the intrauterine fetus from presentation. the buttocks being the presentation of the head.

This study aimed to reposition the fetus using biomechanics, throwing ball techniques, and body mechanics for pregnant women at the Independent Midwife Practice of Palembang City. The urgency of the problem in this study is the high incidence of pregnant women with a breech fetus, thereby reducing the probability of the mother giving birth normally.

METHODS

This type of research is a quasi-experimental study without a comparison group (pretest and post-test without control group design). The study was obtained by examining the position of the fetus in the uterus before and after the intervention. The results obtained from measurements in these groups will be compared and analyzed. This research was carried out for 7 months, from March to September 2022. The place of research was carried out at the Meli Rosita Independent Midwife Practice Place (TPMB), located at Sematang Raya place number 879 A, Sako District, Palembang City, the Midwife Independent Practice Place (TPMB).) Teti Herawati, which is located at Jalan Sultan Mansyur Lorong KMS Said number 96B RT 02 RW 01, Bukit Lama Village, Ilir Barat I District, Palembang City, TPMB Lismarini which is located at Talang Kelapa Housing KM 12, Palembang City.

The sample in this study were some pregnant women who were diagnosed with the breech presentation with a total sample of 30 pregnant women. The variables in this study consisted of independent variables, namely biomechanics of ball throwing techniques and body mechanics and the dependent variable was the repositioning of the fetus. Instructors of throwing ball techniques and body mechanics are carried out by therapists who have been certified in PAZ Maryam training, ultrasound examinations are carried out by doctors and midwives who have certified in 2-dimensional (2D) and 4-dimensional (4D) ultrasound training. The tools and materials used in this study were to simulate the biomechanics of throwing balls and body mechanics as well as materials for pregnancy examinations using ultrasound, including a comfortable ANC examination room equipped with air conditioning, an examination bed, 2D/4D ultrasound equipped with a screen. monitor, printer, doppler, sphygmomanometer, stethoscope, camera, mattress, pillow, and a small plastic ball.

The research procedure consisted of demonstration procedures and assistance with throwing ball techniques and body mechanics (this movement was only carried out once by a trained therapist) namely the initial stage of a biomechanical examination procedure, which aims to determine the asymmetrical foot/extremity. brought forward when throwing the ball technique, among others: The client is asked to lie on the mat, a relaxed position with both legs stretched forward, and the therapist with a squatting position sitting beside the client's knee examines by pressing both client's knees, the therapist observes the client's feet, the part of the foot that is farther away/falling is defined as the asymmetrical side of the body.

The next procedure is to repair the pelvis with light movements that do not disturb the fetus in the uterus. The asymmetrical foot is placed on the normal/symmetrical foot, the therapist brings both feet between the therapist's knees, the hands are intertwined behind the head with the head flexed, asking the client to direct his body slightly to the symmetrical part, the therapist directs both legs in asymmetrical direction, giving instructions to perform movements simultaneously (this action is repeated up to 3 times while paying attention to the client's condition), demonstrating the technique of throwing the ball, among others: the client is in a standing position on the floor while maintaining a mechanical body, both feet are opened parallel to the shoulders, feet asymmetry is brought forward (eg right foot), symmetrical hand (eg left hand) grips the ball, instructs the client to throw the ball towards the asymmetrical foot (crossing motion), which is preceded by stomping in place of the asymmetrical foot with light movements. Simultaneously after the pounding of the feet followed by the movement of the hands throwing the ball forward sideways (cross) and symmetrical feet) for example the left foot (crossing in front of the asymmetrical foot (eg right foot). Asking the client to repeat the movement that has been demonstrated. Assisting the client until very proficient The movement can be repeated with a frequency of 10-15 times Asking the client to repeat the movement at home 2-3 times a day with a frequency of 10-15 times while paying attention to the client's condition. throwing ball movements and body mechanics. Respondents were asked to fill in the research logbook, including the date and time of the study, perceived complaints, and documentation. Monitoring and evaluation ware carried out every day, by contacting the respondent's WhatsApp number researchers and research assistants, as control if the respondent felt uncomfortable comfort after doing the biomechanics of the throwing ball and body mechanics, respondents were asked to immediately come to the TPMB, to be given further action. After 14 days, the respondent was asked to come to the TPMB for a post-ultrasound examination.

Ultrasound operating procedures include pressing the Power button on the ultrasound machine, allowing some time to "boot up", To start writing the client's identity, press the "Patient" button using the trackball and keyboard on the patient sheet, Before using make sure the transducer probe is properly attached, make sure the knob is not loose. To start the inspection, please select "Probe menu", Linear type for high-resolution results, and Convection/Curve type for deeper structural examination. Next, apply jelly on the client's stomach, use the selected probe, and select the 2D

button if you want to make 2-dimensional observations, or the same thing if you want to make 3-dimensional observations press the 3D button. Then press the "depth and zoom" setting button. To adjust the TGC (time gain compensation) slide the knobs to the right or the left, the top knob for the listed point (less deep) is getting lower, the deeper, if you have got the visualization of the desired ultrasound result, you can press the button " Freeze". To save the image then use the "Store" button. "Measure" button to measure the object being scanned. Use the Track Ball & the 'Set' button to define a mark (point/ mark) so that measurements can be made, the length or width of the object. To measure volume (in the kidneys, for example) take measurements as above, only 3 types of measurements are needed, namely, length, width, and height (depth. After completing observations, turn off the instrument by pressing the power button off. Probe/transducer maintenance procedure: a. Clean the probe from the remaining jelly when the inspection schedule has ended. b. When the probe is not in use, always place the probe in the usual probe holder c. Make sure the probe hanger is dry and clean of any remaining jelly d. Avoid storing the probe in hot temperatures or exposure to direct sunlight. e. Store the probe in a separate place from other instruments. f. When storing the probe, use the probe cable clip to secure the probe cable. The maintenance procedures of the ultrasound aircraft are 1. Clean regularly ultrasound machine, make sure there is no dust attached 2. Keep the ultrasound machine in a dry and cool place 3. Close the US plane tightly G after use (News Letter, Integra. 2016).

Data analysis in this study consisted of univariate analysis, to determine the frequency distribution of maternal age, gravida, gestational age, maternal occupation, maternal blood pressure, amount of amniotic fluid, fetal back position, and maternal asymmetry. analysis to determine whether the biomechanics of throwing the ball and body mechanics affect the repositioning of the fetus (change in fetal presentation from the breech to the head) in the womb using the Mc-Nemar test, to obtain the p-value value. If the p-value <0.05 is obtained, then there is a significant effect, the intervention of biomechanics of throwing the ball and body mechanics (independent variable) on fetal repositioning/head presentation (dependent variable). However, if the p-value is > 0.05, it means that there is no significant effect.

This research has received a research ethics certificate from the Health Research Ethics Committee of the Health Polytechnic of the Palembang Ministry of Health Number: 0195/KEPK/Adm2/II/2022.

RESULTS AND DISCUSSION

The data obtained in this study were data before and after 14 days of treatment. The data obtained in this study were then analyzed statistically using statistical applications, which included the homogeneity test of the sample using the homogeneity of variance test, and descriptive analysis to determine the mean, and standard deviation. The resulting data is distributed homogeneously.

Table 1.
Univariate Analysis

Variable	n	%	Min	Maks	Mean	Median	*SD*
Mother's Age (year)	30	100	19	39	28.93	28.00	5.010
Gestational Age (week)	30	100	28	35	31.17	31.50	2.465
Gravida							
- First pregnant	7	23.1					
- Second pregnant	10	30.0					
- Thread pregnant	6	19.4					
- Fourth	5	16.1					
- Fifth	1	3.2					
- Sixth	1	3.2					
Mother's Job							
- Housewife	20	64.5					
- Teacher	2	6.5					
- Private employee	7	22.6					
- PNS	1	3.2					
Blood Pressure							
- Normal	28	93.3					
- Height	2	6.7					
Amount of amniotic fluid							
- Enough	21	70.0					
- Less	9	30.0					
Fetal Back Position							
- Right	19	63.3					
- Left	11	36.7					
Asymmetric Mom							
- Right	16	53,3					
- Left	14	46.7					
Pre Fetal Presentation							
- Breech	30	100					
Presentasi Janin Post							
- Breech	7	23.3					
- Head	23	76.7					

In Table 1. Of the 30 respondents, the age of the highest respondent is 39 years and the lowest is 19 years. The lowest respondent's gestational age was 28 weeks and the highest was 35 weeks. The highest maternal gravida was the second pregnancy as many as 12 respondents (38.7%). Most of the mothers' occupations were as housewives (IRT) as many as 20 respondents (64.5%). Most of the respondent's blood pressure was in the normal range, as many as 28 respondents (93.3%). Of the 30 respondents with a sufficient amount of amniotic fluid, there were 21 respondents (70%), while the amount of amniotic fluid was insufficient as many as 9 (30%). The location of the fetal back of the respondents was the right back of as many as 19 respondents (63.3%). The most asymmetric mothers are on the right side, namely as many as 16 respondents (53.3%). Of the 30 respondents who took part in the study , 23 respondents (76.7%) experienced a reposition/change of position into a head presentation after being given treatment.

Table 2.
Effect of Ball Throwing Biomechanics and Body Mechanic on Fetal Reposition (Post Presentation)

Ball Throwing Biomechanics and Body Mechanic	Post Presentation				*p-value*
	Head		Breech		
	n	%	n	%	
Done	23	76.7	7	23.3	0.0001
Total	**23**	**76.7**	**7**	**23.3**	

In Table 1. It can be seen that of the 30 respondents, the age of the highest respondent is 39 years and the lowest is 19 years. The lowest respondent's gestational age was 28 weeks and the highest was 35 weeks. The highest maternal gravida was the second pregnancy as many as 12 respondents (38.7%). Most of the mothers' occupations were as housewives (IRT) as many as 20 respondents (64.5%). Most of the respondent's blood pressure was in the normal range, with as many as 28 respondents (93.3%). Of the 30 respondents with a sufficient amount of amniotic fluid, there were 21 respondents (70%), while the amount of amniotic fluid was insufficient as many as 9 respondents (30%). The location of the fetal back of the respondents was the right back of as many as 19 respondents (63.3%). The most asymmetric mothers are on the right side, namely as many as 16 respondents (53.3%). Of the 30 respondents who took part in the study , 23 respondents (76.7%) experienced a reposition/change of position into a head presentation after being given treatment. The concept of motion in the biomechanics of throwing a ball is linear motion, which is in the form of movement on both straight and curved trajectories without body rotation. The respondent's body and the upper and lower extremities move at the same speed and direction (Ardiyanto, H., 2019). According to Pratiwi (2012), when in a standing still position, the respondent's body weight is directly proportional to the floor reaction force acting on the soles of the feet. When the respondent stomps asymmetrically on the floor, a greater vertical force occurs.

Table 2. shows that of the 30 respondents who took part in the study, 7 respondents did not succeed in repositioning their fetus into a cephalic presentation. All samples taken were in the third trimester with gestational age between 28-36 weeks, according to Wardhana (2017), in the third trimester, the fetus has the same great opportunity for head presentation and breech presentation. If at that gestational age, the intrauterine does not have sufficient space, then the fetus with a breech presentation will be difficult to reposition into a head presentation. The intrauterine fetus is surrounded by amniotic fluid. The weight of the fetus acts on the center of gravity. The combination of these two forces, the gravitational force and the buoyant force of the amniotic fluid will support the head to rotate downwards if the resultant force can resist the friction between the fetus and the uterine wall and ensure that there is no obstruction (Wardana, E. 2017)

Table 3.
Relationship between Respondent's Amniotic Water Volume and Fetal Reposition (Post Presentation)

Amniotic Water Volume	Post Presentation				*p-value*	*OR*
	Head		Breech			
	n	%	n	%		
Enough	21	100	0	0	0.0001	4.500
Less	2	22.2	7	77.8		
Total	**23**	**76.7**	**7**	**23.3**		

In Table 3, it is known that from 30 respondents who had sufficient amniotic fluid volume, it had a significant effect on fetal repositioning, from breech presentation to cephalic presentation with a p-value of 0.0001. While the volume of amniotic fluid is less, it is not enough to support the repositioning (rotation of fetal presentation) into a head position. The results of the Odd Ratio of 4,500 indicate that a fetus with sufficient amniotic fluid volume provides a 4,500 opportunity for rotation to cephalic presentation. Intra-uterine fetus, covered by amniotic fluid (amniotic fluid). According to Kosim, MS (2010), the volume of amniotic fluid will continue to increase in line with the rapid growth of the fetus. The average volume of amniotic fluid reaches its peak at 34 weeks of gestation in the range of 800-1500 milliliters. Normal amniotic fluid is clear yellow. Amniotic fluid is needed for the continued growth and development of the intra-uterine fetus, therefore it has several functions, including providing space for the fetus to move freely and the development of the musculoskeletal system, maintaining a relatively stable intra-uterine environment, developing the

lungs and digestive system of the fetus and lastly. serves as a cushion and protection of the fetus against trauma from outside, protects the body temperature of the fetus, evens out the pressure in the uterus at parturition so that the cervix opens and provides the birth canal when the membranes rupture (Kosim, MS., 201). Amniotic fluid is formed by amniotic cells, as ultrafiltration from maternal plasma (Kosim, MS., 2010). Circulation of amniotic fluid has a large contribution to the survival of the fetus, so it is very important to maintain its volume. Amniotic fluid regulation is highly dependent on three important components: amniotic cells that produce amniotic fluid, fetal urine production, and the volume of amniotic fluid swallowed by the fetus after the second trimester of pregnancy (Kosim, MS., 2010). The amniotic fluid itself is white, slightly cloudy, and has a distinctive odor, slightly fishy and sweet. This fluid has a specific gravity of 1.008, which decreases with gestational age. The amniotic fluid consists of 98% water, the rest consists of inorganic salts and organic matter and if examined properly, there are lanugo hairs (fine hair from babies), epithelial cells, and vernix caseosa (fat that covers the baby's skin). Protein was found on average 2.6% grams per liter, mostly as albumin (Kosim, MS., 2010). The process of repositioning the location of the fetus is very dependent on the volume of amniotic fluid. If the amniotic fluid volume is sufficient, it will greatly support the movement of the fetus more freely, on the contrary, if the amniotic fluid volume is less (a little) it will make it difficult for the fetus to move. This repositioning process and the presence of amniotic fluid are also assisted by fetal movements (Dibah, F., 2012).

Monitoring of amniotic fluid is routinely carried out when pregnancy enters the third trimester, (Age, G., 2018). Measurement of amniotic fluid volume uses the amniotic fluid index (Amniotic Fluid Index) with a normal volume in the range of 5-20 (Age, G., 2018). Measurement of body fluid index by measuring the number of the deepest pockets of fluid in 4 quadrats. Measured from the vertical midline of the mother and the horizontal line between the symphysis pubis and the uterine fundus. Assessment of amniotic fluid volume using the Amniotic Fluid Index (AFI) (Age, G., 2018). AFI is the number of deepest pockets of fluid in 4 quadrats between the vertical midline of the mother and the horizontal line between the symphysis pubis and the uterine fundus (anteroposterior diameter), where the maternal abdomen is divided into four quadrants using the midline and umbilicus (Age, G., 2018).

CONCLUSION AND SUGGESTIONS

Based on the analysis, it is known that of the 30 respondents who took part in the biomechanics of ball throwing and body mechanics research, 23 respondents succeeded in repositioning the fetus into a head presentation. Throwing and body biomechanics certainly influence fetal repositioning.

CONFLICT OF INTEREST STATEMENT

The authors declared that no potential conflict of interests with respect to the authorship and publication of this article.

REFERENCES

Age, G., Test, N., Profile, B., & History, F. (2018). *Amniotic Fluid Index Approach to Fetal Well-Being Intrapartum Procedures*.

Ardiyanto H. (2019). Principles of Qualitative Biomechanics: Efforts to Bridge Theory and Application in Sport Science. 9(3).54-62.

Berhan, Y., & Haileamlak, A. (2016). The risks of planned vaginal breech delivery versus planned caesarean section for term breech birth: A meta-analysis including observational studies. BJOG: An International Journal of Obstetrics and Gynecology, 123(1), 49–57. https://doi.org/10.1111/1471-0528.13524

Danang, AS., and Irwanto, E. (2018). Biomechanics Analysis Study of the Open Spike Footwork Step in Volleyball on the Power of the Limb Muscles. Journal of Sports Achievement, 14(1), 81-89.

DeCherney. (2013). Current Diagnosis dan Treatment: Obstetrics and Gynecology. Mc.GrawHill Medical.

Dewi, HN., Maryanto, S., Puspita D., & Riadini, AY. (2019). The Correct Body Mechanic Principle and Low Back Pain in The Third Trimester Pregnant Women. 2nd International Conference on Applied Science and Health, ICASH-A042, 269-272.

Dibah, F. (2012). The Relationship of Multiparity with the Incidence of Buttocks Presentation in the Obstetrics Section of Muhammadiyah Hospital Palembang. Thesis at the Faculty of Medicine, Muhammadiyah University of Palembang.

Fitria, Santoso, E.B. (2021) Effectiveness of Moxibustion and Knee Chest Position on Successful Rotation of Fetal Position with Breech Presentation in Third Trimester. Journal of Media Bina, 5(8); 4959-4964

Harjanti AI., and Miskiyah Z. (2017). Management of 34 weeks of pregnancy with breech location using the Knee-Chest Method. Journal of Nursing and Midwifery, 9(1), 107-109.

Kemenkes, RI (2014). Government Regulation of the Republic of Indonesia Number 97 of 2014 concerning Health Services for the Pre-pregnancy Period, Pregnancy, Childbirth, and Postnatal Periods, Implementation of Contraceptive Services, and Sexual Health Services

Kosim. MS. (2011). Amniotic fluid examination. Sari Pediatrics, 11(5), 379–384.

Lubis, D. S. (2018). Relationship of Mother's Knowledge with Sectio Caesarea (SC) Birth History at RSIA Norfa Husada Bangkinang 2018. Doppler, 2(2), 62–69. https://journal.universitaspahlawan.ac.id/ index.php /doppler/article/view/198

Mappaware NA, Syahril E, Latief S, et al. (2020). Obstetric Ultrasound in Medical Perspective, Bioethical And Islamic Rules. Wal'afiat Hosp J. 2020;1(1):1-14. doi:10.33096/whj.v1i1.2

News Letter, Integra.2016.Ultrasonografi (USG).www.integra.co.id.

Nurdiyana, S. (2020). Description of the Characteristics of Mothers in Labor with Breech Position at the Kesdam Jaya Hospital in 2018. Syntax Literate; Indonesian Scientific Journal, 5(1), 128. https://doi.org/10.36418/syntax-literate.v5i1.862.

Paryono. (2012). Posture in Pregnant Women. BALABA article, 8(1), 26-29.

Potter & Perry. 2011. Basic Nursing 7th. Published : Mosby Elsever. Inc. United State of America.

Pramana, C. Breech Delivery Management. https://www.researchgate.net/publication/335528808_MANAJEMEN_PERSALINAN_SUNGSANG/link/5d6bee01a6fdcc547d71fd07/download.

Pratiwi, I. 2012. Application of Biomechanics in Human Movement System. National Seminar on Industrial Design, 23-24 October 2012.

Puspita L and Ernawati. 2020. Benefits of Body mechanics and Hamstring Exercise on Reduction of Waist Pain in Third trimester Pregnant Women. Journal of Midwifery Hope Ibu pakalongan. 7(1), 39-45.

Rahayu, N. A. P., Rafika, R., Suryani, L., & Hadriani, H. (2020). Body Mechanics Techniques Reducing Low Back Pain Levels in Third Trimester Pregnant Women. Journal of Smart Midwives, 2(3), 139–146. https://doi.org/10.33860/jbc.v2i3.89

Saifudin AB. (2008). Butt Presentation. In: Midwifery (4th ed). Jakarta: P.T. Bina Pustaka Sarwono Prawirohardjo.

Santoso, D. A. S., & Irwanto, E. (2018). Biomechanics Analysis Study of Open Spike Footwork Steps in Volleyball Against Limb Muscle Power. Jorpres (Journal of Achievement Sports), 14(1), 81–89. https://doi.org/10.21831/jorpres.v14i1.19985.

Silinaung, M.D.G. Kaeng, JJ and Suparman, E. (2016). The characteristics of breech delivery at Prof. Hospital. Dr. R.D. Kandou Manado. Journal of e-Clinic (eCl), 4(1), 365-368.

Suhartoyo, T, Kusuma, MNH., Budi DR and Listiandi, AD. 2020. Biomechanical-based aerobic and anaerobic exercise analysis Biomechanical-based aerobic and anaerobic exercises analysis SPORTIF Journal. Learning research journal. 6(1), 145-156

Sutrisminah, E. (2017). Factors that influence the success of the knee chest position in the third trimester of pregnancy with breech presentation. Factors Affecting the Success of Knee Cheest Position In Third Trimester Pregnancy With Buttocks Presentation, 41.

Wahyuni, N., Juhana, IV., Winaya, IMN., and Dewi AANTN. 2017. Biomechanics Study Guide Block. Physiology Study Program. Faculty of Medicine, Udayana University. Bali.

Warhana, E, (2017). Factors Affecting the Success of Knee Chest Position in Third Trimester Pregnancy with Buttocks Presentation, Thesis at the Graduate Program of Hasanudin University Makassar.

Wardhani, U. C. (2018). The Relationship between Body Mechanics and the Incidence of Lowback Pain in ICU and Hcu Nurses at Awal Bros Hospital Batam. TOWER of Science, XII(7), 105–110.

Widia, L. (2017) The relationship between parity and breech delivery. Journal of Midwifery and Nursing, Vol. 13(1), 13-18

Wijaya A. Badminton (A Review of Anatomy, Physiology, and Biomechanics). Indonesia Performance J. 2017;1(2):106–11.

Zulaikha, L. I. (2017). The Relationship of Maternal Parity with Breech Locations at BPS Suhartatik, Talang Health Center Work Area. Journal of the Midwifery Service Unit for the State, 1, 1-7.

 ISSN 2502-4825 (print), ISSN 2502-9495 (online)