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THE INFLUENCE OF TAPING TECHNIQUES APPLIED TO THE PHALANGES OF THE DOMINANT HAND ON THROWING ACCURACY AND ACCELERATION IN HANDBALL

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ABSTRACT. *Introduction:* the study addressed the potential influence of finger taping on handball performance, considering that both power and accuracy are essential for success and that athletes often rely on preventive strategies when facing finger or hand injuries.*Objective:* the objective was to examine whether different finger taping configurations affected acceleration, applied force, and throwing accuracy during standardized handball throws. *Material and methods*: ten participants between 19 and 23 years of age were recruited. each performed forty throws under four distinct *Conditions:* without taping, with the little finger taped to the ring finger, the ring finger taped to the middle finger, and the middle finger taped to the index finger. all throws were executed from a standing position at nine meters, following an auditory signal. a precision net was used to restrict the throws to the corners of the goal. *Results:* the analysis showed only minor differences across the four conditions. these differences appeared to be related to the limited sample size, the reduced number of repetitions, and the natural variation in skill level among the participants. *Discussion:* although the variations were small, the findings aligned partially with previous research suggesting that external support strategies may subtly influence throwing mechanics. the results indicated that the potential effects of taping may not be fully captured within

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small-scale trials. *Conclusions*: finger taping did not substantially alter throwing performance in this study. however, further research with larger samples and extended protocols is recommended to clarify its role in competitive handball.

Keywords: taping, acceleration, force, accuracy, handball, throw

INTRODUCTION

Sports and physical education are key elements to a healthy lifestyle. Sports are structured physical activities carried out by virtue of some rules and require focused training with the intention to achieve outcomes or performance. These activities define an individual's lifestyle, enhance health condition, and enhance character formation (Santa-Moldovan et al., 2024). It is known well that sport and physical health connection is one of the prime topics of medicine, physiology, sport science, and psychology. This connection is further extended to sociology research fields as well, particularly public health surveys, interviews, and questionnaires being carried out as prime research methods. These studies continuously indicated notable favorable connections between participation in sports and improvement in physical and mental health. For example, in the early 1990s, extensive surveys were conducted on nationally representative populations of between 3,500 and 6,500 participants, some of which were developed and implemented by the Public Census and Investigation Office (Șerban & Baciu, 2017).

The human body is continuously exposed to external forces and impacts to which the muscles respond through contraction. These contractions can be negative (eccentric) or positive (concentric). During eccentric contractions, the muscles undergo a lengthening phase characterized by elasticity or stretching (negative action), whereas during concentric contractions, the muscles experience a shortening phase with elastic force generation (positive action) (Pop et al., 2008).

Strength training is essential as it serves a protective purpose: stronger muscles are able to absorb weight and tensile forces before failure occurs at the muscle or musculo-tendinous junctions. Any deficiency in muscle strength, asymmetry, or imbalance can lead to musculoskeletal injuries such as patellofemoral pain and lesions resulting from the weakening of the vastus medialis oblique fibers, as well as shoulder pain and dysfunction due to decreased strength of the stabilizing muscles (Pop & Chihaia, 2015).

Important factors in preventing injuries during training and competitions include proper recovery and rebuilding after effort, as well as adequate warm-up and stretching. Equally important is adherence to training planning and periodization to ensure injury prevention, considering the program established at both national and international levels, along with the objectives of the team (Pop & Chihaia, 2015).

When performed correctly, stretching exercises offer benefits that go beyond merely enhancing flexibility. They improve both physical and mental relaxation, lower the risk of injury to joints, muscles, and tendons, decrease post-exercise muscle tension and soreness, and enhance mobility by stimulating the production of synovial fluid in the joints as well as the components that make up connective tissue (Pop & Chihaia, 2015).

Handball is a complex sport that requires a high degree of coordination, speed and precision in the technical elements and procedures performed by the players. These abilities are strongly influenced by the proper functionality of the athlete's upper and lower limbs (Anderson et al., 2020). Taping procedures are prevention procedures of injuries or, in case of finger injuries (Bahr & Krosshaug, 2005). Used when it is not fully recovered yet, there are procedures to immobilize two side-by-side-fingers to permit further activity by the athlete (Laver et al., 2018). Sport and physical education are a determinant factor regarding the construction of an active and healthy lifestyle with implications not only towards motor development itself but towards socialization as well. Extracurricular sporting activities significantly contribute to extracurricular learning by providing learners with chances to train motor skills and to achieve useful skills towards life and towards society (Prodea, Joldeș, & Pop, 2020). Meanwhile, at high performance level, there is a priority to undertake individualization at training and to prevent injury employing enhanced monitoring techniques. The assessment of cardiorespiratory capacity, like VO_2max determination employing standard procedures, provides helpful information regarding effort-related body reaction and permits training loads to adapt to each athlete's profile (Tărăran, Tărăran, & Păunescu, 2023). The application of any such research protocols is relevant towards performance optimization itself but towards risk reduction regarding fatigue and injury and is indeed crucial towards achieving long-term excellence by elite athletes. Thus, physical education, extracurricular activities, and application of enhanced scientific evaluation tools are ancillary and add towards health and performance and support them reciprocally.

Modern sports conditioning and physical education are increasingly founded upon scientifically justified protocols that optimize performance while diminishing injury risk and promoting effective rehabilitation. Early physical education programs have been shown to improve gross motor proficiency—balance, coordinating and entire-body controlling young children substantially and this lays foundations both for sporting development and for diminishing risk to injuries further through life (Boros-Balint et al., 2022). In rehabilitation schemes, post-operative knee protocols involving appropriate positioning for exercises, graduated frequency and intensity are pivotal to allowing tissue repair while maintaining functional mobility (Racolta et al., 2009). Further, new preparatory procedures, whole-body vibration, stimulus-variance regimes and proprioceptive training—hold exciting hopes for accelerated recovery and maintaining strength amongst untrained or recovering populations (Racolta et al., 2009). As a group, these studies highlight education involving physical movement, early motor maturity and carefully constructed recoveratory protocols as key pillars to today's sport and movement sciences. This research starts from the premise that the application of taping techniques may influence, to a certain extent, the strength, accuracy and acceleration of a throw in handball. The dominant hand is the primary tool of execution and therefore it must function optimally and within normal parameters to maximize the force, acceleration and accuracy of a throw (Weber et al., 2014). Consequently, this study focuses on evaluating the impact of taping techniques applied to the phalanges of the dominant hand on these essential parameters for handball performance.

The importance of this topic is significant, as it can enhance athletic performance and prevent injuries. The results of this research may have practical applications in developing personalized strategies for athletes, adapted to their needs and biomechanical particularities.

MATERIAL AND METHODS

The main method used in conducting this study was the experimental method. This research method involves modifying or creating certain factors to determine a phenomenon, under conditions chosen by the researcher. An experiment implies isolation or, more precisely, the focus of attention on the specific subject or target group, followed by the application of a series of tests to observe how the group being tested reacts because of the tests performed.

Ten subjects participated in this experiment, 3 female and 7 males, aged between 19 and 23. According to the informal interview, 2 of the subjects play handball at a professional level, while 8 have an average of 10 years of handball experience. The subjects of this test signed a consent form for voluntary participation in the experiment. For this study, the 10 subjects were not divided into groups, but remained together in a single group of 10.

The objectives of this research are to obtain accurate data using sensors that transmit in real time the throwing force, acceleration and accuracy of the examined individual, to compare different sets performed under various conditions.

The experimental trial was carried out as follows: the subject stood with their back to the goal, on the 9-meter semicircle, holding the ball at chest level with both hands. At the first auditory signal given by the application, the subject had to prepare, as the next auditory signal they had to turn as quickly as possible and throw as accurately as possible at the goal, aiming for one of the four corners of the goal for the throw to be considered successful. The sensors were placed on the arm and on the wrist using specific elastic bands and the middle finger were taped together, and in the fourth set, the index finger and the middle finger were taped together or straps. Everyone completed 4 sets of tests, with 10 repetitions per set. In the first set, the fingers were not taped, in the second set, the little finger and the ring finger were taped together; in the third set, the ring finger.

The materials used were as follows:

· Taping band for binding two fingers. Adhesive tape for fixation made of white synthetic silk, with synthetic adhesive in strips. Water repellent when impregnated, highly permeable to air, easily removable without leaving residues. Dimensions: 2.5cm x 9.2m.

· Kipsta SG500 precision net: dimensions 3x2m and weight of 800g, main material: 100% polyester, strap: 100% polypropylene.

· Two smartphones, one for the Movella Dot kit application and one for the stopwatch-type application "On Your Marks". Nokia G60 5G: Android 12 operating system, height 166mm, width 75.93mm, thickness 8.61mm, weight 190g, battery 4500mAh, 6GB RAM, 128GB internal storage, Snapdragon 5G processor. Samsung Galaxy A54: Android 13 operating system, height 158.2mm, width 76.7mm, thickness 8.2mm, weight 202g, battery 5000mAh, 8GB RAM, 128GB internal storage, Exynos 1380 octa-core processor.

· "On Your Marks" application, which simulates the start of a race by setting time intervals between "On Your Marks" and "Ready" as well as between "Ready" and the signal. This application calculates reaction time.

· Movella Dot accelerometer kit, containing 5 sensors, charging case with cables, sensor mounts, straps, and elastic bands of various sizes to which the sensors are attached. Included: one strap 5.08cm x 128cm, two straps 5.08cm x 55cm, two straps 5.08cm x 29cm, elastic band for forearm 15-20 cm, elastic band for lower limb 26-38 cm, elastic band for arm 22-34cm, elastic band for thigh 40-52cm. Materials: Lycra for elastic bands, fabrifoam and plastic for straps and fasteners. Sensor size: 36.3 x 30.35 x 10.8 mm, weight 11.2g, 70mAh battery, Bluetooth 5.0 compatible with both Android and iOS.

· Movella application, which allows us to control Movella DOT wearable sensors from the smartphone. Key features: scanning and connecting sensors, data measurement and recording, magnetic field mapping (MFM), and Over-the-Air (OTA) firmware upgrades.

Research Structure: The research process involved recruiting the subjects, gathering at the 'Gheorghe Roman' sports hall of the Faculty of Physical Education and Sport, signing the informed consent forms, explaining and demonstrating the testing procedure, performing throws without sensors, preparing the body for effort with selective activation of the locomotor system, and finally executing throws both without and with sensors attached.

Measurement Protocol: The measurement protocol consisted of choosing the appropriate strap or sleeve, attaching and starting the sensors, connecting them to the smartphone application, positioning the subject at 9 meters, initiating the recording in the Movella DOT application and the On Your Marks software, performing 10 throws across four series, then stopping both the software and sensors, and finally removing the sensors.

Taping Protocol: The taping protocol involved binding the little finger with the ring finger, the ring finger with the middle finger, and the middle finger with the index finger, each pair being wrapped at least five times so that the fingers moved as a single unit.

RESULTS

Table 1. Data distribution

	Statistic	df	p
Ar1_Sz1_AccAverage	.879	7	.223
Ar1_Sz1_AccMax	.836	7	.091
Ar1_Sz2_AccAverage	.948	7	.714
Ar1_Sz2_AccMax	.888	7	.267
Ar2_Sz1_AccAverage	.867	7	.175
Ar2_Sz1_AccMax	.842	7	.104
Ar2_Sz2_AccAverage	.940	7	.638
Ar2_Sz2_AccMax	.967	7	.873
Ar3_Sz1_AccAverage	.871	7	.188
Ar3_Sz1_AccMax	.798	7	.069
Ar3_Sz2_AccAverage	.833	7	.085
Ar3_Sz2_AccMax	.922	7	.485
Ar4_Sz1_AccAverage	.927	7	.528
Ar4_Sz1_AccMax	.923	7	.495
Ar4_Sz2_AccAverage	.874	7	.201

	Statistic	df	p
Ar4_Sz2_AccMax	.797	7	.068
ProcSet1	.919	7	.461
ProcSet2	.949	7	.720
ProcSet3	.859	7	.147
ProcSet4	.840	7	.099

Considering that the values obtained in the p-column are greater than 0.05, we can say that the data are properly distributed.

Table 2. ANOVA test results

Parameter	Variable	N	Average	Standard Deviation	Min	Max	df	Average Square	F	p
Sz1_AccAverage	Ar1	7	5.82	1.46	3.81	7.34	3	4.773	2.402	.093
	Ar2	7	5.97	1.30	4.49	7.53				
	Ar3	7	6.42	1.62	4.70	8.81				
	Ar4	7	7.64	1.19	5.50	8.96				
Sz1_AccMax	Ar1	7	7.74	2.74	4.85	11.01	3	6.794	1.302	.297
	Ar2	7	7.38	2.09	5.05	9.78				
	Ar3	7	8.77	2.61	5.36	11.15				
	Ar4	7	9.54	1.45	7.19	11.26				
Sz2_AccAverage	Ar1	7	6.39	1.75	3.86	8.72	3	1.128	.586	.630
	Ar2	7	5.94	1.27	4.30	7.66				
	Ar3	7	6.14	1.22	4.74	7.49				
	Ar4	7	5.45	1.22	3.86	7.89				
Sz2_AccMax	Ar1	7	7.90	2.52	4.63	11.36	3	1.398	.294	.829
	Ar2	7	7.67	2.08	5.03	11.00				
	Ar3	7	8.10	1.91	5.37	10.38				
	Ar4	7	7.07	2.15	5.23	11.37				
Proc	Ar1	7	27.14	22.88	.00	60.00	3	32.143	.107	.955
	Ar2	7	31.42	21.93	.00	60.00				
	Ar3	7	31.42	12.15	20.00	50.00				
	Ar4	7	28.57	6.90	20.00	40.00				

Considering that the p-values are greater than 0.05, we cannot say that there is a significant difference between the four types of throws. The only point of interest is Sz1_AccMedie, where p = 0.093, which is the value closest to 0.05, suggesting a trend toward signification.

Table 3. Bonferroni test results

Dependent Variable	(I) Throw	(J) Throw	Difference of average (I-J)	Standard error	p	95% Confidence Interval	
						Lower Bound	Upper Bound
Sz1_AccMedie	Ar1	Ar2	-0.147	0.754	1.000	-2.3138	2.0190
		Ar3	-0.601	0.754	1.000	-2.7678	1.5650
		Ar4	-1.820	0.754	.142	-3.9862	.3466
	Ar2	Ar3	-0.454	0.754	1.000	-2.6204	1.7124
		Ar4	-1.672	0.754	.217	-3.8388	.4940
	Ar3	Ar4	-1.218	0.754	.714	-3.3848	.9480
Sz1_AccMax	Ar1	Ar2	0.364	1.221	1.000	-3.1466	3.8746
		Ar3	-1.027	1.221	1.000	-4.5376	2.4836
		Ar4	-1.800	1.221	.920	-5.3110	1.7101
	Ar2	Ar3	-1.391	1.221	1.000	-4.9016	2.1195
		Ar4	-2.164	1.221	.534	-5.6751	1.3461
	Ar3	Ar4	-0.773	1.221	1.000	-4.2840	2.7371
Sz2_AccMedie	Ar1	Ar2	0.455	0.741	1.000	-1.6757	2.5864
		Ar3	0.259	0.741	1.000	-1.8718	2.3903
		Ar4	0.949	0.741	1.000	-1.1821	3.0801
	Ar2	Ar3	-0.196	0.741	1.000	-2.3271	1.9350
		Ar4	0.494	0.741	1.000	-1.6374	2.6247
	Ar3	Ar4	0.690	0.741	1.000	-1.4414	2.8208
Sz2_AccMax	Ar1	Ar2	0.229	1.166	1.000	-3.1228	3.5812
		Ar3	-0.203	1.166	1.000	-3.5547	3.1493
		Ar4	0.830	1.166	1.000	-2.5221	4.1818
	Ar2	Ar3	-0.432	1.166	1.000	-3.7839	2.9201
		Ar4	0.601	1.166	1.000	-2.7513	3.9526
	Ar3	Ar4	1.033	1.166	1.000	-2.3194	4.3845
Proc	Ar1	Ar2	-4.286	9.258	1.000	-30.9039	22.3325
		Ar3	-4.286	9.258	1.000	-30.9039	22.3325
		Ar4	-1.429	9.258	1.000	-28.0468	25.1896
	Ar2	Ar3	0.000	9.258	1.000	-26.6182	26.6182
		Ar4	2.857	9.258	1.000	-23.7611	29.4753
	Ar3	Ar4	2.857	9.258	1.000	-23.7611	29.4753

This test is used only if ANOVA indicates significance. In my case, no test was significant, all p-values were greater than 0.05, so Bonferroni interpretation has only exploratory value. However, we have an average difference of -1.820 with p=0.142, which indicates a difference of nearly two units, potentially of practical relevance, even if not statistically significant. All p-values from the ANOVA test were above 0,05, meaning that no statistically significant differences were identified between the types of throws regarding average or maximum acceleration. The Bonferroni test did not identify significant differences between throw pairs, although toward significance can be observed in Sz1_AccAverage between Ar1 and Ar4.

DISCUSSION

Following the ANOVA and Bonferroni tests, certain differences between the throwing conditions were observed, although these did not reach statistical significance. One possible explanation is related to the way average acceleration was calculated, namely across the entire execution phase of the throw. Previous biomechanical research has shown that temporal characteristics of throwing movements can substantially influence kinematic outputs, even when peak values remain unchanged (Weber et al., 2014). Variations in throw duration induced by finger taping may therefore alter average acceleration values without necessarily affecting maximal acceleration.

In addition, biomechanical constraints induced by finger taping may lead to subtle neuromuscular and kinetic chain adaptations. Binding two adjacent fingers can increase tension in the forearm musculature and alter finger–ball interaction, potentially affecting force transmission and release mechanics. Similar observations have been reported in studies examining external support and injury-prevention strategies, where mechanical constraints did not substantially impair performance but induced compensatory adjustments in movement patterns (Bahr & Krosshaug, 2005).

Another factor that may explain the variability in acceleration values is the use of an auditory stimulus to initiate the throw. Reaction-based motor tasks introduce additional cognitive and attentional demands, which can influence movement timing and coordination. Previous studies have demonstrated that externally triggered movements may result in small inconsistencies in execution, particularly in complex, whole-body actions such as throwing (Anderson et al., 2020).

The absence of statistically significant differences may also reflect the relatively high and homogeneous level of handball experience among participants. Experienced athletes are known to adapt rapidly to mechanical constraints and external perturbations, preserving task performance through motor redundancy and compensatory strategies (Laver et al., 2018).

Although the ANOVA test followed by the Bonferroni correction did not reveal statistically significant differences between the four types of throws, the observed differences in mean values—particularly between Ar1 and Ar4—suggest potentially meaningful quantitative trends. Similar findings have been reported in applied sport science research, where non-significant statistical outcomes still reflected practical effects limited by small sample sizes or high inter-individual variability (Weber et al., 2014).

Regarding Figure 1, although no statistically significant differences were found in Sz1_AccAverage, a progressive increase in mean acceleration was observed as taping shifted toward distal phalanges. This trend may indicate a modification of throwing biomechanics, potentially characterized by a more pronounced proximal-to-distal sequencing or "whip-like" effect, as grip stability decreases with distal finger restriction (Weber et al., 2014).

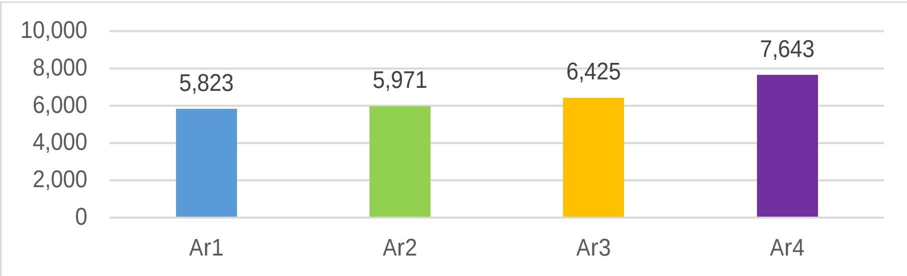

Fig. 1. The Sz1_AccAverage value for the four variables Ar1, Ar2, Ar3, and Ar4

Although there is no statistically significant difference between the mean acceleration values recorded by the first sensor for the four variables, a difference can still be observed. Interestingly, the trend of the average acceleration value for Sz1 increases as the taping shifts toward the distal phalanges. The lack of statistically significant differences may be due to the small sample size, as well as the fact that all subjects had medium/high-level handball experience, which may have led to an adaptation to this type of restriction of phalangeal mobility. The increase in mean acceleration for Sz1 may indicate a modification of the throwing biomechanics, caused by a more pronounced whipping effect as the grip on the ball decreases when the fingers are taped more distally.

CONCLUSIONS

The conclusions obtained from conducting an experiment must be consistent with the results observed after its completion. In this paper, starting from the proposed hypothesis—namely, "Whether the taping techniques used by handball players on the phalanges of the dominant hand influence the accuracy and acceleration of the throw in handball"— the following was deduced:

· There is a small difference that was identifiable through statistical tests.

· The results obtained were not statistically significant.

· This difference is insignificant due to the limitations encountered during the examination: small group size, limited number of throws, and the level of preparation.

· If this experiment were conducted at a higher level—with more participants, a greater number of throws, and varying levels of training, significant results would most certainly be found.

At the present, based on the tests that were conducted, and the statistical results obtained, it can be concluded that there are no significant differences regarding whether the taping techniques used by handball players on the phalanges of the dominant hand influence the accuracy and acceleration of the throw in handball.

AUTHOR CONTRIBUTIONS

Alexandru Andrei Gherman, Raul Octavian Achim, Adrian Pătrașcu, and Leon Gomboș contributed equally to the design and implementation of the research, to the data collection, analysis and interpretation of the results, and to the writing of the manuscript. All authors had equal rights and responsibilities in the preparation of this work. All authors have read and agreed to the published version of the manuscript.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest related to this research.

REFERENCES

Anderson, P., Williams, R., & Smith, J. (2020). *Biomechanics and injury prevention in sports*. Springer. https://doi.org/10.1007/978-3-030-24945-1

Bahr, R., & Krosshaug, T. (2005). Understanding injury mechanisms: A key component of preventing injuries in sport. *British Journal of Sports Medicine*, *39*(6), 324-329. https://doi.org/10.1136/bjsm.2005.018341

Boros-Balint, I., Deak, G.-F., Molnar, A. H., & Ciocoi-Pop, D. R. (2022). The effects of physical education on gross motor skills in 6-7 years old. *INTED Proceedings, 1*, 7388–7392. https://doi.org/10.21125/inted.2022.1864

Laver, L., Landreau, P., Seil, R., & Popovic, N. (2018). *Handball sports medicine: Basic science, injury management and return to sport*. Springer. https://doi.org/10.1007/978-3-662-55892-1

Pop, I. N., Voda, S., & Prodea, C. (2008). Pliometria si Rolul ei in Optimizarea Invatarii tehnicii Judo-ului. *Studia Universitas Babes-Bolyai Educatio Artis Gymnasticae, LIII, 1.*

Pop, S., & Chihaia, O., (2015). Measures to Prevent Injuries in the Performance Rugby. *Studia Universitas Babes-Bolyai Educatio Artis Gymnasticae., LX* (3), 67-72.

Prodea, C., Joldeș, C., & Pop, I. N. (2020). Study on the implementation of the badminton game in extracurricular activities at grades V and VI. *Studia UBB Educatio Artis Gymnasticae, LXV*(1), 83–92.

Racolta, H., Ciocoi-Pop, D. R., & Popescu Dana, S. (2009). Important factors to follow so as to facilitate rehabilitation after knee surgery. *Studia Universitatis Babeş-Bolyai Educatio Artis Gymnasticae, 54*(4), 39-46.

Santa-Moldovan, C. I., Baciu, M. A., Serban, R. T., Monea, D., & Santa, I. (2024). The Impact of COVID-19 Pandemic on Students' Sport Activity. *Studia Universitas Babes-Bolyai Educatio Artis Gymnasticae*, *LXIX* (2), 55-64. https://doi.org/10.24193/subbeag.69(2).12

Șerban, R. T., & Baciu, A. M. (2017). Improving the quality of life through participation in physical activity- the tennis camp pilot study. *Timisoara Physical Education and Rehabilitation Journal, 10*(19), 159–164. https://doi.org/10.1515/tperj-2017-0035

Tărăran, C., Tărăran, A., & Păunescu, C. (2023). Study regarding the importance of monitoring physiological parameters in elite fencing. *Studia UBB Educatio Artis Gymnasticae, LXVIII*(2), 25–38.

Weber, A. E., Kontaxis, A., O'Brien, S. J., & Bedi, A. (2014). The biomechanics of throwing simplified and cogent. *Sports Medicine and Arthroscopy Review, 22*(2), 72–79. https://doi.org/10.1097/JSA.0000000000000028