

The effect of non-dominant foot on sports performance from the specialists' point of view.

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Abstract:

The study aimed to address the non-dominant foot in the sports field. For that, an electronic questionnaire was directed to trainers to know the effect of this phenomenon and then come up with solutions based on their opinions to improve the level of the non-dominant foot. Where the results of the research concluded that the difference between the feet is present in the majority of players, and the matter may be remedied in the younger groups, and from here it was questioned whether a specialized training program might make a difference in the general athletic performance.

.KEY WORDS : THE NON-DOMINANT FOOT; ATHLETIC PERFORMANCE .

المخلص:

هدفت الدراسة إلى التطرق للقدم غير المهيمن في المجال الرياضي. و لأجل ذلك، تم انجاز استبيان إلكتروني موجه للمدربين لمعرفة تأثير هذه الظاهرة ثم الخروج بحلول مبنية على آرائهم لتحسين مستوى القدم غير المهيمنة . حيث توصلت نتائج البحث الى أن الاختلاف بين القدمين موجود عند أغلبية اللاعبين و قد يتم تدارك الأمر في الفئات الشبانية و من هنا تم التساؤل عما إذا أن برنامج تدريبي متخصص قد يحدث فرقاً في الأداء الرياضي العام.

الكلمات المفتاحية: القدم غير المهيمنة؛ الاداء الرياضي.

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1-Introduction:

The human body is always considered one of the secrets of God's creation and a miracle in itself, where we find differences in the measurements of the feet, the shape of the eyes, the length of the legs...etc.. In the field of sports, the dominant and repetitive characteristic is the preference of some parties over others, especially the dominance of the right hand is on the left or vice versa, and the same is true for the legs or feet. And some statisticians may take this for granted, but given the reality in football in particular, we have always noticed that the footballer does not respond to certain playing situations if it comes to using his other weak foot, or so to speak, the non-dominant foot, Here and after determining this phenomenon, it is worth thinking about how to reduce it or improve the level of performance of the non-dominant foot to achieve the best results in terms of physical and motor performance, especially skills. Several studies, each of which followed several methods, showed that paying attention to the human body equally or even focusing on the non-dominant side has an impact on several levels, whether it comes to studies that dealt with the side of injuries and for that we mention exclusively the study of (Wang & Fu, 2019a)-(Maulder, 2013)-(Krajnc et al., 2010)-(Svensson et al., 2016) . Where the results showed that the non-dominant foot may be susceptible to injury as a result of lack of attention to it, and the hypotheses in other studies went to the fact that the lack of movement on the weak foot may lead to the injury of the main or dominant foot, in other words. As for the physical, motor and skill aspect, we find many studies that we relied on to infer in this research the study of(Seeley et al., 2008)-(Wang & Fu, 2019b)-(Yanci & Camara, 2016)-(Moore et al., 2017)-(Suh et al., 2021)-(Bhise & Patil, 2016)-(Paillard & Noé, 2020) Where the majority of the results of the studies showed that the difference between the feet exists and that the way to improve the level of the weak foot varies according to the age and the level of the players or athletes, but this phenomenon is witnessing an unusual interest in recent times, which led us to complete an electronic form with meaningful questions directed to the actors in the field The athlete includes academics, physical trainers, and of course the coaches, in order to find out the reality of the impact of the non-dominant foot on the performance of players of all ages in order to outline the next phase to complete this research.

2- General objective of the study:

The research objectives were:

- 1 - Investigation into the non-dominant phenomenon of foot in the Algerian sports community and in the field of football in particular
- 2- Knowing the coaches' point of view of the impact of the non-dominant foot on the athlete's performance
- 3- Going deeper into the details, which at a high level are key to many problems, as is the case in this study
- 4 - Opening new scientific horizons for research in this subject by linking it to the various aspects in the field of sports such as biomechanics, symmetry and others.

3- Procedural definition of the concepts mentioned in the research:

- **The non-dominant foot:** Knows it (ALI, 2004) The underused foot of the player means the right foot of the left player and vice versa. The researcher concludes that the non-dominant foot is, of course, the foot that the player or athlete does not depend on to perform the movements or skills that are required to perform the perfect performance. We may find in many references different names for it, but they have the same meaning in the last.

- **Sports performance:** Knows it (*Athletic Performance - an Overview | ScienceDirect Topics*, n.d.) has four major dimensions: skill, strength, endurance, and recovery. High performance in any sport requires a characteristic blend of these dimensions, although individual sports differ widely in that balance.

The researcher concludes that the Sports performance is the player or athlete making movements that often rise to the level of motor skill and through which the extent of his level is judged.

4- The methodological procedures used in the study:

4-1 Method and tools:

After delving into the previous studies related to the topic of the research, we found that in order to properly understand the problem it must be diagnosed first, so an online questionnaire form addressed to the actors in the field of sports from academics and coaches was completed. The number of answers as a whole was 56. The questionnaire consisted of four axes, the first axis was on the personal

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information of the questioner and his biography, followed by the axis of planning and programming and its relationship to the subject of research, then the difference between the feet in dominance and finally the genetic aspect, tests and measurements. It should also be noted that oral interviews were conducted with several coaches, and even currently retired international players and other nationals. All this took place from the beginning of the previous January 2022 until the end of April in different states of the Algerian west, according to the events that brought the sample (former international players in particular) to be questioned through the oral interview. To be finally collected by Google Form in the form of Excel data and then unloaded in the tables that will come later.

- The scientific foundations of the tool:

The validity of the arbitrators or experts in this study was adopted through a good examination of the questionnaire’s axes and questions, and that's to make sure the questionnaire measures what's prepared to measure it(Rhali et al., 2022).and therefore the researchers concluded that the answers were objective regarding the researcher’s experience as a trainer for different age groups, or even through the oral interviews that were conducted.

And the percentages of answers were calculated and thus obtained the results that allowed a smooth analysis of the different answers.

4-2 Presentation and Analysis of Results:

Table N°1: Personal information and cv

Educational level	DES	Lisense Professional	License	master	magister	doctorat
	%4	%8	%12	%56	%4	%16
The job	teaching		training		Teaching and training	
	%20		%16		%64	

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Training certificate	N C	FAF	degree	CAF	S.CON	P.t	X player	teacher
	%4	%37.5	%29.2	%37.5	%16.7	%25	%4.2	%4
Years of experienc	1 to 5			5 to 10		More than 10		
	%26.9			%34.6		%38.5		
Categories supervised	U13	U15	U17	U19	U21	Senior		
	%78.3	%52.2	%56.5	%30.4	%30.4	%52.2		

S.CON= Sports Consultant / P.t= physical trainer /N C=no certificate

Comment on Table No. 01:

The above table represents the personal and biographical information of all the respondents. It is noted that the majority of trainers already hold university degrees, where we recorded 56%, in addition to training certificates, 37.5% for both national and African certificates. Also, of the sample, they hold a master's degree, and some of them are from He trains and teaches together at a rate of 64%. It is also worth noting that 78.3% have trained junior groups under 13 years of age, and this is what gives satisfaction at first sight.

Table N°2: The reality of planning and programming

Type of planning	annual	monthly	weekly	daily
	%38.5	%30.8	%26.9	%3.8
Programming the training	According to the program		According to needs	
	%46.2		%53.8	
Depending on the weakness	yes		no	
	%88.5		%11.5	

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The type of capabilities often targeted	Physical abilities	Kinetic abilities		Skilled capabilities
	%65.4	%53.8		%65.4
Programming a special training	yes	no		sometimes
	%50	%23.1		%26.9
Solutions Level need to improving	By improving the physical level first	By improving the Skill level first	Training equally between feet	Give it some importance during the training session
	%3.8	%7.7	%34.6	%53.8

Theoretical background:

Many studies indicate that the transmission of motor learning or training on various physical or skill qualities is in varying proportions depending on the nature of the exercise and the level of players from beginners to applicants and the target physical characteristic and training stage . We can also say that the development of neuromuscular compatibility and some of the sports aspects, fitness levels and skill through customized programs will inevitably be of benefit (Kihel et al., 2021). the study of (Fousekis et al., 2010) In its results, it indicated that Players with highly professional training experience rely on more symmetrical use of their lower limbs. The researcher believes that this benefits the players in the event that he is exposed to a situation while playing, where he finds himself forced to use his other non-dominant foot, and he hopes that the result will be satisfactory, and this is the opposite of what we see in our stadiums in many matches However, by continuous training on a specific trait such as balance, for example, it may give satisfactory results, and this is what a study of (Bilateral isokinetic peak torque of quadriceps - ProQuest, n.d.) indicated that there is no evidence of muscular imbalance in the extensor and flexor muscle groups between the right

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and left legs in professional football players with control of one or both legs.

Comment on Table No. 02:

The above table answers the reality of programming and planning and their relationship to the non-dominant foot and the details that have always been a key to many problems in sports performance. Where we recorded that the trainers resort to changing the weekly programming in the event of noticing a deficiency or weakness in one of the physical or motor qualities, and sometimes the skill, where the latter amounted to 65.4%. It is worth noting that the respondents agreed to give importance to training the non-dominant foot during the training sessions with a percentage of 65.4%.

Table N°3: The effect of the difference between the feet in terms of dominance

Knowledge of the dominant foot	By observation.	Question	Field tests
	%69.2	%7.7	%23.1
Ability and speed of improvement	Right	Left	
	%48	%52	
Negative non-dominant foot effect	yes	no	May be
	%68	%12	%20
Does training	yes	no	May be

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give equally	%23.1	%53.8		%23.1
Where's the weakness?	Physical abilities	Kinetic abilities		Skilled capabilities
	%0	%22.2		%37
Dominant in both feet	always	sometimes	Rarely	no
	%15.4	%50	%30.8	%3.8

Theoretical background: The human body is one of the secrets that still baffles the minds of scientists around the world and in various fields, and if we talk about the sports field we will find many characteristics and characteristics according to each sport or effectiveness and by age and sex and according to a study of (Bishop et al., 2018) that The prevalence of inter-limb asymmetries has been reported in numerous studies across a wide range of sports and physical qualities; however, few have analysed their effects on physical and sports performance. It should also be noted that the dominance of the lower limbs (or lateral preference) can affect functionality. Doctors are often asked to make judgments regarding when the patient has "recovered" adequately from the injury, using measures of strength results and dynamic performance(McGrath et al., 2016). The researcher believes that whether it is non-functional symmetry or the extent of the use of clinical or field tests, in the majority of studies we find that non-dominant foot always raises many questions and concerns whether it is to try to bring the level of the athlete to higher levels or in order to avoid injury as well.

Comment on Table No. 03:

The table shows that the non-dominant foot is most often discovered by observation, as its rate reached 69.2%. And that the weakness is often in the skill performance, as 37% was given as the answer. While it was reported that the players who use both feet with equal efficiency are rare. It should also be noted that it was decided that the training session does not give equal value to both feet, and it was 53.8% is the answer to that.

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Table N°4: Interometerical measurements and the genetic aspect

physical measurements of players?	Yes		No	
	%50		%50	
Foot measurement effect	Yes		No	
	%32		%68	
Leg length effect	Yes		No	
	%52		%48	
On the genetic side.	yes	no	sometimes	I didn't pay attention to that.
	%34.6	%15.4	%38.5	%11.5
Same as the dominant father's foot.	yes	no	sometimes	I didn't pay attention to that.
	%23.1	%23.1	%42.3	%11.5

Theoretical background:

In terms of activity or inactivity a study of (Fogelholm et al., 1999) indicated that the parents’ role in childhood activity patterns and obesity. A novel finding was that the parent–child relationship of inactivity appeared to be stronger than that of vigorous activity.

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Hence, parents who want to reduce their children's inactivity may have to pay attention to their own lifestyle. A study (Leg Length, Sitting Height and Postmenopausal Breast Cancer Risk. - Abstract - Europe PMC, n.d.) indicated that Of leg-length to sitting-height, and other anthropometric dimensions. It is further assumed that an individual may achieve this "genetic potential" if the environment is free of insults that delay or retard growth. So the researcher believes that the transmission of the genetic aspect may be in the physical structure or height, but without physical activity, effort and perseverance, there will be no transmission of physical traits in the genetic form.

Comment on Table No. 04:

The results of the table express that the trainers take measurements and use field and anthropometric tests, but they are not sure about the relationship of the genetic aspect to the dominance of the feet, and this raises more questions in the future.

4-3 Discussion and interpretation of the results:

The results of the research concluded that training and despite the presence of specialists in the field, attention to details is not sufficient enough, and that is what we recorded, as importance is not given to developing the level of the non-dominant foot, so in order to bring the young player to an advanced level, work must be done On the physical, motor and skill side, and focus on functional symmetry to avoid the player in situations where he finds himself compelled to use his other weak foot to be of course below the required level, so we recommend the need to find the appropriate recipe to sensitize actors in the sports field to the need to pay attention to such matters and to allocate training programs that are Its content aims to give both feet the same training dose, especially in the smaller groups, and it is necessary to find standardized tests to find out the extent of the delay in the level of the non-dominant foot and criteria for starting to rectify the missed training.

Conclusion:

In the end, we can say that the attention to detail in the sports field in Algeria is somewhat low. This is evidenced by the findings of the study, whether it is related to the coach per se or to players who do not

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have sufficient skill in both feet. Therefore, this study recommends taking Taking into account what has been achieved and translated on the ground through:

- Inclusion of customized programs to improve the level of the non-dominant foot
 - Setting standards to monitor the extent of the difference between the feet through standardized tests and measurements
 - Introducing video analysis technology in various sports with the aim of obtaining body symmetry in the hope of developing it into functional symmetry
 - Rationalizing the intensity of exercises for young players, especially with regard to muscle-strengthening exercises, in which there is a lot of controversy
- Dig deeper into such research as the height of the striking foot of the ball and the differences between dominant and non-dominant feet
- Doing experimental research on different groups of players and even female players
 - Implementation of a tool directed to players with the aim of identifying the extent of their weak foot and the extent of their dependence on the dominant other, even if in their daily live.

References used in the research:

ALI, A. (2004). The effectiveness of skill exercises for the undistinguished foot to develop the level of performance of some basic skills using the method of competition on mini-courts. *Scientific Journal of Physical Education Sciences*, 5(5), 107–127.

<https://doi.org/10.21608/amps.2004.134029>

Athletic Performance—An overview | ScienceDirect Topics. (n.d.).

Retrieved June 12, 2022, from

<https://www.sciencedirect.com/topics/medicine-and-dentistry/athletic-performance>

Kihel, S., Elhadi, A., & Saidi, Z. (2021). The effect of a proposed adaptive motor program according to some kinematic variables on the development of some capabilities of neuromuscular compatibility for deaf and dumb children 12-15 years. *Journal of Excellence in The*

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Science and Techniques of Physical and Sports Activities, 6(2), 633–644.

Rhali, ben hdia, houar, abdellatif, & madani, mohamed. (2022). The reality of assessing the skill performance of Algerian footballers from the the coaches point of view. *Sports System Magazine*, 9(2), 251–266.

Bhise, S., & Patil, N. (2016). Dominant and Non-dominant Leg Activities in Young Adults. *International Journal of Therapies and Rehabilitation Research*, 5(4), 257.

<https://doi.org/10.5455/ijtrr.000000172>

Bilateral isokinetic peak torque of quadriceps—ProQuest. (n.d.).

Retrieved May 20, 2022, from

<https://www.proquest.com/docview/202711410?pq-origsite=gscholar&fromopenview=true>

Bishop, C., Turner, A., & Read, P. (2018). Effects of inter-limb asymmetries on physical and sports performance: A systematic review. *Journal of Sports Sciences*, 36(10), 1135–1144.

<https://doi.org/10.1080/02640414.2017.1361894>

Fogelholm, M., Nuutinen, O., Pasanen, M., Myöhänen, E., & Säätelä, T. (1999). Parent–child relationship of physical activity patterns and obesity. *International Journal of Obesity*, 23(12), 1262–1268.

<https://doi.org/10.1038/sj.ijo.0801061>

Fousekis, K., Tsepis, E., & Vagenas, G. (2010). Lower Limb Strength in Professional Soccer Players: Profile, Asymmetry, and Training Age. *Journal of Sports Science & Medicine*, 9(3), 364–373.

Krajnc, Z., Vogrin, M., Rečnik, G., Crnjac, A., Drobnič, M., & Antolič, V. (2010). Increased risk of knee injuries and osteoarthritis in the non-dominant leg of former professional football players. *Wiener Klinische Wochenschrift*, 122(2), 40–43.

<https://doi.org/10.1007/s00508-010-1341-1>

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Leg length, sitting height and postmenopausal breast cancer risk. - Abstract—Europe PMC. (n.d.). Retrieved May 20, 2022, from <https://europepmc.org/article/pmc/3389429>

Maulder, P. S. (2013). Dominant limb asymmetry associated with prospective injury occurrence. *South African Journal for Research in Sport, Physical Education and Recreation*, 35(1), 121–131. <https://doi.org/10.10520/EJC134231>

McGrath, T. M., Waddington, G., Scarvell, J. M., Ball, N. B., Creer, R., Woods, K., & Smith, D. (2016). The effect of limb dominance on lower limb functional performance – a systematic review. *Journal of Sports Sciences*, 34(4), 289–302. <https://doi.org/10.1080/02640414.2015.1050601>

Moore, B. B., O'Dwyer, N. J., Adams, R. D., & Cobley, S. (2017). “Snap-kicking” in elite Australian football: How foot preference and task difficulty highlight potential benefits from bilateral skill training. *International Journal of Performance Analysis in Sport*, 17(1–2), 109–120. <https://doi.org/10.1080/24748668.2017.1304030>

Paillard, T., & Noé, F. (2020). Does monopedal postural balance differ between the dominant leg and the non-dominant leg? A review. *Human Movement Science*, 74, 102686. <https://doi.org/10.1016/j.humov.2020.102686>

Seeley, M. K., Umberger, B. R., & Shapiro, R. (2008). A test of the functional asymmetry hypothesis in walking. *Gait & Posture*, 28(1), 24–28. <https://doi.org/10.1016/j.gaitpost.2007.09.006>

Suh, D. K., Lee, J. H., Rhim, H. C., Cho, I.-Y., Han, S.-B., & Jang, K.-M. (2021). Comparison of muscle strength and neuromuscular control up to 1 year after anterior cruciate ligament reconstruction between patients with dominant leg and non-dominant leg injuries. *The Knee*, 29, 15–25. <https://doi.org/10.1016/j.knee.2021.01.006>

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Svensson, K., Eckerman, M., Alricsson, M., Magounakis, T., & Werner, S. (2016). Muscle Injuries of the Dominant or Non-Dominant Leg in Male Football Players at Elite Level. *British Journal of Sports Medicine*, 50(22), e4–e4. <https://doi.org/10.1136/bjsports-2016-096952.15>

Wang, J., & Fu, W. (2019a). Asymmetry between the dominant and non-dominant legs in the lower limb biomechanics during single-leg landings in females. *Advances in Mechanical Engineering*, 11(5), 1687814019849794. <https://doi.org/10.1177/1687814019849794>

Wang, J., & Fu, W. (2019b). Asymmetry between the dominant and non-dominant legs in the lower limb biomechanics during single-leg landings in females. *Advances in Mechanical Engineering*, 11(5), 1687814019849794. <https://doi.org/10.1177/1687814019849794>

Yanci, J., & Camara, J. (2016). Bilateral and unilateral vertical ground reaction forces and leg asymmetries in soccer players. *Biology of Sport*, 33(2), 179–183. <https://doi.org/10.5604/20831862.1198638>