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## ORIGINAL

# THE IMPACT OF FUNCTIONAL MOVEMENT SCREENING ON INJURY PREVENTION AND ATHLETIC PERFORMANCE IN COMPETITIVE SPORTS

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### ABSTRACT

Athletes who are at risk of injury should be screened prior to the competition season. As a team activity, three-person basketball requires careful attention to injury concerns. This study investigates the prediction efficacy of the Functional Movement Screen (FMS) test for sports injuries in three-person basketball players. The multivariate logistic regression model revealed a high correlation between damage and the FMS functional screening assessment. Descriptive statistics, correlation coefficient analysis, ANOVA test analysis, and chi square analysis between functional movement screening and injury prevention and athletic performance were among the results produced by the research study, which was based on primary data analysis and measured using SPSS software. Significantly decreased risk of injury was linked to higher FMS functional screening exam scores. Overall, the results demonstrate that functional movement screening has a direct and substantial influence on both athletic performance and injury prevention. According to the results, athletes who are more likely to suffer injuries in team-neighborhood and championship sports may be identified using the FMS test. It is recommended that coaches and players use FMS assessments in local sports, such as three-person in competitive sports, to predict and develop more specialized sports injury prevention programs.

**KEYWORDS:** Functional Movement Screening (FMS), Injury Prevention (IP), Athletic Performance (AP), Competitive Sports (CS).

### 1. INTRODUCTION

Every year, more students are participating in National Collegiate

Athletic Association (NCAA) sports. There have been 80% more female collegiate athletes and 20% more male athletes since 1988. Sports injuries are on the rise in tandem with the growing number of student players. The injury rate during NCAA athletics participation was constantly between 15 and 20 percent throughout a 16-year period. Injury risk is influenced by movement patterns and physical performance (Wei et al., 2024). A bodily function that may be objectively measured by a suitable test is called physical performance. It is a multifaceted idea that encompasses the neurological system, cardiorespiratory system, and musculoskeletal system. Strength, flexibility, speed, and endurance are examples of individual components that make up physical performance. The FMS test primarily looks at the quality of movement patterns and identifies dysfunctional tendencies. Research has been done on the connections between physical performance elements and the caliber of movement patterns. These relationships haven't been precisely characterized, though. Men and mixed groups have been the primary subjects of the research that have been published thus far. Thus, it is necessary to create these connections amongst women. The Functional Movement Screen (FMS) is a tool used to evaluate the quality of movement patterns. It enables a thorough assessment of the movement apparatus's functional status, detects dysfunctional movement, and identifies asymmetries through variations in paired tests. Numerous studies have shown that both men and women who have low FMS scores are more likely to sustain injuries, and that FMS scores may be used to predict injuries (Pollen, Keitt, & Trojian, 2021). Their presence is demonstrated by efforts to ascertain the connection between the calibre of movement patterns and elements of physical performance. It's unclear, though, how strong and in what direction these ties are. Because there aren't enough research on women, particularly potential links are still unclear. There were no correlations found between the quality of movement patterns, speed, and agility in a mixed group by Parchmann and McBride and among female team sports players by Lockie et al. These results, in contrast, demonstrated that men's performance on speed and agility tests is positively correlated with the quality of their movement patterns. The research provide evidence for these findings. Chang demonstrated the connection between the agility t-test score and a trunk stability push-up. Sannicandro demonstrated a relationship between professional football players' FMS scores and lower limb power, demonstrating that higher lower limb power was linked to better movement patterns. Strong correlations between trunk muscle strength and movement pattern quality and flexibility have been found in research. Similar findings are also supported by research that shown that the quality of the movement patterns was influenced by the strength of the trunk muscles. However, the aforementioned research do not exclusively focus on women and potential sex differences in relationships between FMS score and asymmetries with physical performance components; rather, they also consider males and mixed groups. Kibler, however, shown that women are more flexible than males, who are more powerful than women

(Chang & Lu, 2020). The choice of an intervention population is negatively impacted by this inaccuracy. Evidence also suggests that memory accuracy is restricted beyond 12 months and calls into doubt the reliability of a self-reported history of injury. A preventative neuromuscular training program has been shown to be beneficial in preventing ACL injuries in a comprehensive review. But according to the numbers-needed-to-treat research, more than 100 athletes require training to avoid a single ACL injury. Applying preventative training to the right group would be ensured by using a screening exam to identify athletes who are at risk for injury. The Functional Movement Screen (FMS)<sup>TM</sup> is a dependable and effective way to monitor movement patterns while carrying out particular tasks. Even when used by inexperienced examiners, the FMSTM is a dependable screening technique, unlike other methods that call for extensive training, certification, or a time of familiarization. When using the same team of examiners, test-retest analysis of the FMSTM shows high reliability. By definition, a screening test is meant to identify individuals who require additional evaluation in asymptomatic populations. Athletes who may benefit from a professional evaluation to determine the root cause of any movement dysfunction may be identified by the FMSTM as being at risk of injury. Numerous studies have shown a predictive correlation between injury risk and FMSTM composite scores. According to Kiesel et al., the findings of a preseason FMSTM might be used to predict significant injuries in professional football. Maximum sensitivity and specificity were achieved with an FMS composite score of 14 or below. Internal and external validity are severely limited by the study's retrospective design, lack of reliability reporting, use of a wide operational definition of injury, and inclusion of all male professional athletes. When examining the connection between an FMSTM score and injury risk in a group of female collegiate athletes, Chorba et al. used a more expansive definition of injury. Once more, among female collegiate athletes without a history of anterior cruciate ligament surgery, injury development was associated with FMSTM composite scores of 14 or below. The study's generalisability is limited by its exclusive usage of females, and the precision of this correlative link is threatened by the small sample size (n=38). Using the FMSTM, O'Connor et al. examined the injury rates of 874 male Marine Corps officer candidates. Based on information entered into the electronic medical record, injuries were recorded. Their findings, which were consistent with earlier research, indicated that the highest degree of sensitivity and specificity when assessing for injury risk was achieved with an FMSTM score of 14 or below. The fact that only 10% of the examined patients received scores of 14 or below is a drawback of this study. This suggests that either the screeners used a more lenient grading criteria than in other research, or the sizable study sample may not be typical of the general population. Additionally, injury data gathered during a professional medical examination was used in this study. This necessitates precise labelling and recording by medical professionals who are not participating in or knowledgeable about the research methodology. Another

distinctive feature of this cohort is that they were part of a training program with a deadline for completion. Being recycled into the following semester and delaying course completion are two consequences of presenting to a healthcare practitioner with an injury. Therefore, if physical function was not severely restricted, there might not be any injury reporting (Coogan et al., 2020). The FMSTM is a time-efficient and reasonably priced way to screen athletes and military personnel for potential injuries and those who need additional evaluation. The FMS has moderate to good intrarater and interrater reliability, according to earlier research. This study aimed to investigate the relationship between pre-season FMS scores and injury development in a group of collegiate athletes. It was hypothesised that a low FMS composite score and a history of prior injuries, both separately and together, would reliably predict future injury risk.

## 2. Literature Review

The outcomes of this study demonstrate that non-sporty young men who've lesser-corpse obese might be greater inclined to experience the ill effects of wound frequency, though amid sport themes, young men who invest greater energy preparing toward greater chance of being harmed. Convincingly, complete functional movement screen cutoff scads to every subset didn't effectively separate the people who experienced the individuals who didn't experience the ill effects of wound, &, in this way, studies examination doesn't uphold functional movement screen as a physical issue expectation apparatus(Karuc et al., 2021). The reason for this basic survey was to decide if regularizing functional movement shield compound scads contrast beyond Secondary School, university, & expert sport populaces & to decide if regulating compound scads correspond with paces of extreme wound beyond various university athletics. Studies discoveries possibly subvert the functional movement shield's prescient legitimacy. Albeit the functional movement shield might have different uses, this basic survey gives additional proof opposed the compound scads toward wound expectation in competing competitors (Pollen et al., 2021). The point of this review was to examine the distinctions in athletic-explicit practical trials among subordinate b-ball & football competitors & dissect the game wound chance & events. The scads of run, deftness, & functional movement shield execution were contrasted among b-ball & football competitors. The scads of run, vertical jump, & deftness trials didn't have contrasts along athletic wound dangers & events, however the functional movement shield scads was related along athletic wound event (Chang & Lu, 2020). Studies purpose was to intends a latest pattern of useful wound preclusion in view of examination of the impacts of athletics wound preclusion & practical exercise. In this survey, useful wound preclusion is intending as latest pattern consolidating athletics wound preclusion & practical exercise. The subsequent investigation of useful wound preclusion ought to be explored on competitors, cudgel individuals & the overall population toward the

advancement of projects to forestall athletics wound & further develop athletics execution & the impacts by games, corpse portions & epoch(An & Lee, 2021). Studies explain that equilibrium & center adjustment practices have frequently been related with further developed competitor execution & additionally diminished occurrence of wounds. Whilst such workouts appear to be proficient in the counteraction of wounds, there's lacking proof with respect to their part in athletic-explicit execution & associated practical developments(Zemková & Zapletalová, 2022). Researchers reveal that artists confront exceptional & difficult actual requests that recognize them from conventional athletic competitors involving more prominent scopes of development over execution. Subsequently, the practical movement shield might not' be sufficiently delicate to recognize 'suitable' from 'exorbitant' portability & enough distinguish wound chance in artists. In general, it's proposed that experts ought to involve alert prior to involving the practical movement shield as an essential viewing system to distinguish university artists at by & large or lower limb wound chance (Coogan et al., 2020). The point of this precise audit was to distinguish, fundamentally evaluate, & examine concentrates on that researched the relationship of practical execution trials along come back to execution afterwards Lower limb wounds in competitors partaking in elevated-influence athletics. No proof subsists to Lower limb wounds apart from afterwards front or back knee tendon recreation. Hence, investigation on practical execution related with come back to execution is suggested in great imminent associate surveys incorporating competitors with a Lower limb wound(Vereijken et al., 2020). By upholding toward the reception of artificial intelligence & innovation in athletics scientific discipline, this review adds to improving competitor concern as well as makes ready toward prospective exploration to advance competitor execution & wellbeing. Generally, this exploration features the job of computer based intelligence impelled examination in propelling games medication by oblation a diagram toward mentors, athletics medication experts, & competitors the same to explore the intricacies of wound counteraction & the executives(Mishra, Habal, Garcia, & Garcia, 2024). Studies suggest that with the rising likelihood of athletics wound in athletics preparing or rivalry, stem sustain force preparing has been provided greater importance, involving practical preparation & recovery preparing. Studies demonstrates that the practical development & vigorous equilibrium capacity of the empirical bunch in view of the stem sustain force preparing is superior to that of the benchmark bunch in light of the traditional force preparing(Zhang, 2021). This extensive survey investigates the estimation & checking of sport execution, wound anticipation, recovery, & generally speaking execution advancement utilizing corpse habiliment detectors. The significance of customized gadgets & additional examination on competitor solace & execution influence is accentuated. The rise of habiliment envision gadgets retains guarantee to athletics restoration & execution observing, empowering improved competitor wellbeing, recuperation, & execution in the games business(Seçkin, Ateş, &

Seçkin, 2023). This precise audit was led to research the worth of Broadened reality-helped recovery & wound avoidance techniques on wound restoration & anticipation results. All the more-huge scope great imminent exploration is required to decide if Expanded reality-helped treatment is better than ordinary treatment in athletics restoration & wound counteraction curves along major areas of strength for with proof(Schuermans et al., 2022). The reason for this explores was to investigate the impacts of period whereas a medical procedure (at return to athletic & 90 days afterwards return to athletic) & of exhausting a support on actual execution in sufferers who've gone through knee tendon rehabilitation. Researchers estimated that actual execution estimates would enhance along period & wouldn't be impacted by support requirement. The current review demonstrated that actual presentation proportions of deftness & VJ level better in the initial three Months afterwards return to athletic. This concentrate as well demonstrated that exhausting a Knee support didn't frustrate actual execution(Dickerson, Peebles, Moskal, Miller, & Queen, 2020). Scholars suggest that shove wounds & athletics-associated shove torment are significant weights to competitors playing out a shove stacking athletic. The weight of shove issues in the sport populace features the requirement toward counteraction techniques, viable recovery schemes, & an exclusively founded get back in-action choice. The difficulties to wound counteraction might be tracked down in the quest toward (the association among) important danger elements, foster legitimate viewing trials, & carry out attainable wound anticipation schemes along maximum adhesion from the competitors(Cools et al., 2021). Studies demonstrated that competitors along more prominent inter-extremity deviations, diminish VJ limit, & diminish discontinuous oxidative wellness had a more noteworthy inclination to wound. Along these lines, observing countermovement jump, oxidative execution, & inter-extremity deviations are prescribed provided their aversion to distinguish massive contrasts among harmed & solid young competitors(Fort-Vanmeerhaeghe, Milà-Villaruel, Pujol-Marzo, Arboix-Alió, & Bishop, 2022). Studies elaborate that the Practical Development Shield is generally perceived by practitioners & coaches as an important device to the expectation & counteraction of preparing wounds in athletics populace. The modified practical development shield may really anticipate the chance of preparing wounds. Competitors with all-out modified practical development shield scads under 22 are greater powerless to encountering wounds over preparing (Wei et al., 2024). The review outcomes demonstrated that prior the preparation, the development peculiarity & practical development capacity of the learner competitors were normal. Inter alia, the scads to center dependability, Lower extremity dangerous strength, & polyarticular development trials were assessed as three focuses, displaying phenomenal center soundness & Lower extremity power(Pan, 2024). Studies expects to dissect the impacts of practical preparation on brawn power, hopping, & practical development shield in martial art competitors. Studies have been reviewed, & the definite effect of practical preparation mediations on brawn

power, bouncing, & practical development shield of martial competitors has been confirmed(Wang et al., 2024). Studies expected to inspect the prospective relationship among the Practical Development Shield, Y Equilibrium Trial, & Wharf Mistake Marking Framework. A mix of such trials as a normalized viewing Battery might possibly preferable distinguish wound-inclined competitors over the utilization of every trial as an independent viewing trial(Asgari et al., 2024). The aim of this study is to analyze the relationship among the Practical Development Shield scads & deviations among extremities in the various assignments along contact free wounds in superior novice rugger association performers. Practical development shield compound didn't exhibit contrasts among harmed & non-harmed performers. Lopsidedness in the dynamic upright Leg elevate was unequivocally connected with contact free wound event(Tondelli, Bittencourt, Villalba, & Zabaloy, 2024). Studies claim that regardless of the irrefutable advantages of activity & athletics cooperation, youthful competitors are especially defenseless against Musculo-skeletal wounds. The study intends to prepare mentors, dieticians, nutrition experts, sport coaches, actual specialists, wearing associations, & educational institutions along fundamental information to carry out viable dietary methodologies to wound avoidance, recuperation, & restoration, eventually improving extended haul wellbeing & sport execution(Alcock, Hislop, Vidgen, & Desbrow, 2024). This review was led to contrast & dissect whichever Contrology workout & meditative practice assist with working on the exhibition of women duelers & forestall wound, & the spirited equilibrium trial & practical development viewing trial scads of the first-class grown-up women duelers were contrast & broke down as assessment pointers. The outcomes of this study recommend that Contrology practice & meditative practice may be logical viable in working on the exhibition of grown-up women duelers & wound counteraction by expanding their spirited equilibrium capacity & practical development(Lim et al., 2024). The survey concentrate impartially investigates the current Corpus of examination to give a comprehensive overview, taking into account earlier investigations' potencies & constraints. It provides mentors, competitors, & coaches substantial thoughts to consolidating Plyometrics action toward their court game preparing schedules(Shedge, Ramteke, & Jaiswal, 2024). The primary reason for this examination was to lay out chosen centrifugal abilities marked in non-skating & On-Ice requirements in Ice Hockey performers utilizing the practical development shield trial, VJ, & On-Ice runs. The review discovered definite relationships among practical development shield trials & non-skating & On-Ice boundaries, demonstrating that the practical development shield trial might be utilized to anticipate Ice-skating execution(Baron, Hołub, & Stanula, 2024). Scholars explain that the two magnitude & especially power (for example., degrees of stacking utilized) of preparing appear to be significant to the automated & morphologic transformations toward basically emaciated brawns, ligaments, & castanets. Hence, the preparation power & magnitude utilized toward the crouch & its

varieties ought to logically become more noteworthy whilst sticking to the idea of Periodization & perceived preparing standards(Stone et al., 2024). Studies show that support of execution is, also, a significant component of the counteraction, mental therapy, & continuous consideration of psychological problems. Comprehensive athletics specialists can decide to go toward the sport improvement past the setting of emotional well-being side effects & issues, to assist competitors thrive & accomplish their objectives(Claussen et al., 2024).

**Table 1:** The Result of Model Summary

<b>MODEL SUMMARY</b>						
<b>MODEL</b>	<b>R</b>	<b>R SQUARE</b>	<b>ADJUSTED R SQUARE</b>	<b>STD. ERROR OF THE ESTIMATE</b>		
<b>1</b>	.242 <sup>a</sup>	.059	-.025	.62213		
<b>A. PREDICTORS: (CONSTANT), INJURY PREVENTION 2, FUNCTIONAL MOVEMENT SCREENING 1, FUNCTIONAL MOVEMENT SCREENING 2, INJURY PREVENTION 1</b>						

The above result of table 1 illustrates the model summary analysis result reflect the R values, R square values, the adjusted R square rates also that explain the standard error of the estimated values of regression model. The R rate is 24% the modified R square rate is -0.025 the standard error value is 62% inaccuracy of the estimated value of each variable.

**Table 2:** The Result of ANOVA<sup>a</sup>

<b>ANOVA<sup>a</sup></b>						
<b>MODEL</b>		<b>SUM OF SQUARES</b>	<b>DF</b>	<b>MEAN SQUARE</b>	<b>F</b>	<b>SIG.</b>
<b>1</b>	Regression	1.083	4	.271	.699	.596 <sup>b</sup>
	Residual	17.417	45	.387		
	Total	18.500	49			
<b>A. DEPENDENT VARIABLE: ATHLETIC PERFORMANCE</b>						
<b>B. PREDICTORS: (CONSTANT), INJURY PREVENTION 2, FUNCTIONAL MOVEMENT SCREENING 1, FUNCTIONAL MOVEMENT SCREENING 2, INJURY PREVENTION 1</b>						

The above result of table 2 indicate that ANOVA test analysis result represent the model includes regression and residual model. Result indicates that sum of square rates, the mean square values the F statistic also that significant value of each model included regression and residual model. The regression model reveals that its total of square value is 1.083 the mean square value is 27% the F statistic rate is 69% the significant rate is 59% substantially levels between them. the residual model reflect that its total of square value is 17.417 the mean square rates is 38% accordingly. The total value displays 18.500 result shows that sum of square correspondingly.



**Table 3:** The Result of Coefficients

		COEFFICIENTS			T	SIG.
MODEL		UNSTANDARDIZED COEFFICIENTS		STANDARDIZED COEFFICIENTS		
		B	STD. ERROR	BETA		
1	(Constant)	.880	.422		2.088	.042
	Functional Movement Screening 1	.058	.137	.062	.422	.675
	Functional Movement Screening 2	.100	.156	.098	.637	.527
	Injury Prevention 1	.186	.150	.197	1.242	.221
	Injury Prevention 2	.033	.162	.034	.204	.839

**A. DEPENDENT VARIABLE: ATHLETIC PERFORMANCE**

The result of table 3 mentioned above illustrates how the results of the linear regression analysis contained the beta and standard error values from the unstandardized coefficient analysis. Additionally, each independent variable's t statistic values and significant value are displayed in the outcome. The beta values for functional screenings 1 and 2 are 0.058 and 0.100, respectively. The t statistic values of 0.422 and 0.637, respectively, indicate a positive correlation and a 67% and 52% significant relationship with athletic performance. The results of the injury prevention 1 and 2 plays as mediator variables indicate that their beta values are 19% and 3%, respectively. There is a positive and 22% significant relationship between athletic performance and the t statistic value of 1.242 and 0.204. The above-mentioned findings may contribute to the sex disparities in the FMS test's single motor task scores by establishing connections between the quality of movement patterns and the outcomes of physical performance assessments. They demonstrated that in the rotational stability (RS) and trunk stability push-up (TSPU), males outperformed women. Given this finding, it is important to remember that movement quality and physical performance affect the likelihood of injury. Thus, it is important to investigate how they are related. The majority of published research, however, focusses on mixed groups and males rather than only women. Accordingly, the purpose of this study is to evaluate how physical performance factors affect FMS scores and FMS asymmetries in young female university physical education students. In particular, the straightforward correlation between FMS scores and physical performance tests was also investigated. These findings enable the description of the elements of physical performance that are essential for enhancing movement patterns, which can enhance physical fitness, and which can lower the risk of injury. The use of subjective or objective results to identify athletes who are more likely to sustain an injury is not well supported by research. Although a number of studies have identified a prior

injury history as a risk factor for future injuries, the fact that recurrence rates range from 12 to 63% suggests that this factor is imprecise.

**Table 4:** The Result of Test Statistics

TEST STATISTICS					
	FUNCTIONAL MOVEMENT SCREENING 1	FUNCTIONAL MOVEMENT SCREENING 2	INJURY PREVENTION 1	INJURY PREVENTION 2	ATHLETIC PERFORMANCE
<b>CHI SQUARE</b>	12.280 <sup>a</sup>	16.840 <sup>a</sup>	12.520 <sup>a</sup>	14.440 <sup>a</sup>	19.240 <sup>a</sup>
<b>DF</b>	2	2	2	2	2
<b>ASYMP.SIG.</b>	.002	.000	.002	.001	.000
<b>A. 0 CELLS (0.0%) HAVE EXPECTED FREQUENCIES LESS THAN 5. THE MINIMUM EXPECTED CELL FREQUENCY IS 16.7.</b>					

These findings of table 4 show that the chi square values and the significant values of each variable, including the independent and dependent variables, are represented by the test statistic analysis results. Functional movement screenings 1 and 2 had respective chi square rates of 12.280 and 16.840. According to the injury prevention 1, 2 results, the numbers are 12.520 and 14.440, respectively. A positive and 100% significant relationship between them is demonstrated by the athletic performance's chi square value of 19.240 and overall significant rate of 0.000.

**Table 5:** The Result of Descriptive Statistics

DESCRIPTIVE STATISTICS					
	N	MINIMUM	MAXIMUM	MEAN	STD. DEVIATION
<b>FUNCTIONAL MOVEMENT SCREENING 1</b>	50	1.00	3.00	1.6400	.66271
<b>FUNCTIONAL MOVEMENT SCREENING 2</b>	50	1.00	3.00	1.6000	.60609
<b>INJURY PREVENTION 1</b>	50	1.00	3.00	1.6800	.65278
<b>INJURY PREVENTION 2</b>	50	1.00	3.00	1.6200	.63535
<b>ATHLETIC PERFORMANCE</b>	50	1.00	3.00	1.5000	.61445
<b>VALID N (LISTWISE)</b>	50				

The results of above table 5 illustrate how descriptive statistics explain the mean values and standard deviation rates of all variables, including dependent and independent variables, as well as their lowest and maximum values. The results of functional screenings 1 and 2, which are regarded as independent variables, indicate mean values of 1.6400 and 1.6000, respectively.

60% depart from the mean, while the standard deviation rate is 66%. The mean values for injury prevention 1 and 2 are 1.6800 and 1.6200, respectively. Sixty-three and sixty-five percent differ from the mean, according to the standard deviation. 1.5000 average rates and a 61% standard deviation rate from the mean are represented by the athletic performance. The aggregate result shows that the least value is 1.000 and the greatest value is 3.000.

### **3. Discussion**

The study indicated that athletes with an FMSTM composite score of 14 or less with a self-reported history of prior injuries are 15 times more likely to get harmed than athletes with higher scores. The ICC score suggests that this screening may be done reliably with the same set of examiners following a modest bit of training. This is the first prospective research to look at a large cohort of male and female athletes who play a range of contact and non-contact sports. Unlike prior research, a wide definition of injury was utilised to effectively capture the impact of injuries on medical resources and athlete performance. The result that a low FMSTM composite score is predictive of injury risk is consistent with the findings of prior published research, even though the study's findings are more generally relevant to a larger proportion of the athletic population. Both male and female volunteers were assessed and observed over a season of contact and non-contact sports. Previous studies have looked at groups of female collegiate basketball players, professional football players, and male Marine Corps Officer Candidates. A stricter definition of injury was employed in other studies, which only included athletes who had missed at least three weeks of competition. By broadening the definition of injury, conditions that require medical attention in addition to limiting playing time can be included. A broad definition of injury also allows for the inclusion of conditions that may alter movement patterns and peak performance without significantly reducing playing time. To guarantee that every injury was adequately recorded, redundancies in data gathering were used. To make sure that all injuries were properly diagnosed and documented, questions were asked of each team athletic trainer, medical records were examined, and the USMA-specific injury monitoring system was assessed. Prior research depended on a physician visit, precise visit coding, and careful recording to get data on sample injuries, even with larger subject groups. Given the high level of motivation in this sample population to finish required military training as soon as possible, it is probable that certain illnesses were overlooked in order to ensure that applicants graduated on schedule. When evaluating and using the research findings, it is important to take into account the limitations of this study. This descriptive study shows a connection between the start of injuries and poor FMSTM scores. These findings do not imply that insufficient movement patterns, as determined by the FMSTM, are the cause of accidents. Exposure to sports was not sufficiently controlled for. There was no additional discrimination regarding the amount of time each athlete spent playing their sport; nonetheless, athletes who

did not satisfy the three hours of weekly physical activity necessary for entry were disqualified. More playing time and practice, which are linked to a starting position, may also predict injury risk. The inquiry used a broad definition of injury. The significance of injuries that do not result in missed playing time may be questioned by certain readers. For this inquiry, it was considered crucial to document injuries that have a detrimental effect on performance and medical resources.

#### **4. Conclusion**

In young, healthy women, there is a high association between the flexibility and strength of the abdominal muscles and the quality of movement patterns as indicated by an FMS overall score and FMS asymmetries. Furthermore, flexibility is the component of physical performance that has the highest influence on the total score and quantity of asymmetries in FMS, while abdominal muscular strength alone impacts asymmetries in FMS. Our findings imply that abdominal muscle strength and flexibility are crucial for the quality of young women's movement patterns. Avoiding compensating in movement is made easier by having joints with the adequate range of motion and strong abdominal muscles that support the trunk. It might suggest that the increase of abdominal muscle strength and flexibility can impact FMS scores. However, further research is required to confirm whether or if young women's movement patterns are improved by honing these skills. We acknowledge the limitations of our study. Additional physical performance tests that gauge other skills, such as endurance and speed, might be added to the study. It's also important to examine how the kind of physical activity one engages in influences the connection between movement quality and physical performance. Additional research should take these factors into account. Last but not least, the FMSTM was conducted before the competitive season. Repeating the screening test at different times during the competitive season and at the end of the season may be useful to see whether movement patterns change as the season progresses. The results of this study have a number of practical clinical applications. Identifying those who are vulnerable can aid in the creation of intervention strategies that focus on fundamental movement patterns and perhaps lower the incidence of injury. In addition to identifying athletes at risk for injury, movement screening may assist establish when an athlete may safely return to sport with a lower possibility of re-injury. Since past injury history is still a risk factor for future injuries, tests and measurements are necessary to help doctors make decisions about return to play. It is presently debatable what factors need to be taken into account in order to appropriately return an athlete to sports activity after an injury. To fully participate in sports, upper and lower extremity mobility, strength, and motor control must be integrated. One unique screening tool that integrates all of these components in a fast and reliable manner is the FMSTM. Because the FMSTM screening test has a high enough predictive capacity for

future injury incidence, it should be considered for inclusion in return to play recommendations.

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