Generalized Joint Hypermobility as a Risk Factor for Increased Injury in Division I Athletes: A Prospective Cohort Study

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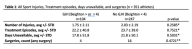
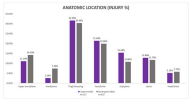
INTRODUCTION: Generalized joint hypermobility (GJH) has been identified as a risk factor for injury in various athletic patient populations. However, it is unknown if this risk applies to athletes across sports at the collegiate level. The purpose of this study was to evaluate the association of GJH as a predisposing risk factor for injury in a population of Division I athletes in the National Collegiate Athletic Association (NCAA). We hypothesized that there is no statistically significant difference in injury rates between GJH and non-GJH athletes.

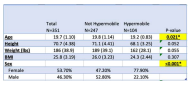
METHODS: Beighton scores were prospectively collected for 351 athletes during their preseason physical examinations at a single institution. Athletes with Beighton scores of 4/9 or greater were diagnosed with GJH. Demographics including age, BMI, sport, and position were recorded. The cohort was followed prospectively for two years. Each athlete's musculoskeletal complaints, injuries, treatments, days unavailable and surgical procedures were recorded. These outcomes were compared between the GJH and non-GJH groups.

RESULTS: Overall, 351 D1 athletes met inclusion criteria for this study. 104 individuals (29.6%) were found to have GJH (Beighton score >/= 4/9) during preseason physical examination. There was no difference in height, weight, and BMI between groups. A higher rate of GJH was observed among females compared to males (p < 0.001). At 1 year, there was no statistically significant difference in number of injuries (1.75 ± 2.11vs 2.03 ± 2.19, p = 0.26), treatment episodes (22.2 ± 40.8 vs 23.7 ± 39.0, p = 0.75), or days away from play (17.8 ± 51.8 vs 21.8 ± 50.1, p = 0.50) (Table 1). When stratifying by sport, hypermobile volleyball players and non-hypermobile wrestlers demonstrated significantly increased injury numbers compared to their counterparts. No significant difference in injury rates were observed in the other sports (Table 2). Additionally, hypermobility was associated with a higher rate of in-practice (p = 0.02) and non-contact injuries (p = 0.011).

DISCUSSION AND CONCLUSION: Overall, joint hypermobility is not associated with increased number of injuries, treatment days, or time removed from play in Division I NCAA athletes. This is the largest to-date investigation of GJH in Division I athletes. Counseling or intervention for athletes with GJH may be warranted for specific sports with particular attention to non-contact and in-practice risks.







	Total	Not Hypermobile	Hypermobile	
	N=351	N=247	N=104	P-value
Age	19.7 (1.10)	19.8 (1.14)	19.2 (0.83)	0.031*
Height	70.7 (4.38)	71.1 (4.41)	68.1 (3.25)	0.052
Weight (lbs)	186 (30.0)	189 (30.1)	162 (26.1)	0.053
BMI	26.8 (3.19)	26.9 (3.23)	24.3 (2.44)	0.307
Sex				<0.001*
Female	53.70%	47.20%	77.90%	
Male	46.30%	52.80%	22.10%