

# Epidemiologic Survey of College Student-Musicians Participating in Marching Band

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## ABSTRACT

Recently named the "Best Damn Band in the Land" by the Bleacher Report, the UNT Green Brigade is one of the most celebrated collegiate marching bands in the country. Students start rehearsing during the summer, rehearse 6 hours a week during the fall semester, and perform at football games. For many, these demands are in addition to those associated with majoring in music. The purpose of this epidemiologic study was to compare health-related problems associated with collegiate marching band across music major and non-major students. A 70 item epidemiologic survey was designed to assess several areas of concern including musculoskeletal and mental health. Following IRB approved protocol, 82% of the Green Brigade Marching Band (N=246/300) filled out the survey at the end of the 2011 fall season. Results reveal many interesting patterns and consequences associated with participating in a collegiate marching band. This study shows demographic variables, patterns of physical and mental health problems, and responses to attitudinal questions regarding perceived value and impact associated with this activity.

## INTRODUCTION

Musicians experience injuries that can be devastating to their careers. Instrument and genre specific epidemiologic studies are used to characterize frequency, intensity, and locations of perceived problems and are often used as the basis for injury prevention. Marching band includes additional physical and psychological demands that are normally associated with playing a particular instrument or genre. These extra demands may be different and extremely important for college students majoring in music. Unfortunately, only 3 studies related to this activity have been reported in the MPPA journal. The purpose of this study was to compare health-related problems associated with collegiate marching band across music major and non-major students.

## METHODOLOGY

A total of 246 college student musicians, including 150 music majors, were successfully recruited from the UNT Green Brigade Marching Band using an IRB approved protocol. Demographic and health-related information was collected at the end of a 15 week fall semester using a 70 item epidemiologic questionnaire developed by the author. Survey questions were designed to assess experiences during the current academic semester.



Table 1. Demographics of the Test Subjects, Music and Non-Music Major

Variables	All	Music Major	Non-Music Major	Test	Sig.
Age Mean (SD)	19.08 (1.102)	19.22 (1.029)	18.86 (1.185)	t	.014*
Gender Freq. (%)	Female 103 (42.4%)	45 (43.7%)	58 (56.3%)	$\chi^2$	.000**
Health Insurance	Yes 204 (83.6%)	105 (75%)	35 (25%)	$\chi^2$	NS
Ethnicity Freq. (%)	No 39 (16%)	21 (53.8%)	18 (46.2%)	$\chi^2$	.020*
Primary Instrument Freq. (%)	African American 19 (7.8%)	7 (36.8%)	12 (63.2%)		
	Asian 7 (2.9%)	7 (100%)	0 (0%)		
	Caucasian 145 (59.4%)	97 (66.9%)	48 (33.1%)		
	Hispanic 61 (25%)	35 (57.4%)	26 (42.6%)		
	Mixed 11 (4.5%)	5 (3.3%)	6 (6.2%)		
	Pacific Islander 1 (0.4%)	1 (100%)	0 (0%)		
	Woodwind 98 (39.8%)	65 (66.3%)	33 (33.7%)	$\chi^2$	.000**
	Brass 110 (44.7%)	72 (65.5%)	38 (34.5%)		
	Percussion 14 (5.7%)	11 (78.6%)	3 (21.4%)		
	Guard 21 (8.5%)	14 (8.8%)	20 (95.2%)		
	Voice 1 (0.4%)	1 (100%)	0 (0%)		
	Piano 2 (0.8%)	2 (100%)	0 (0%)		
Avg. sleep (hrs/day)	6.44 (1.25)	6.34 (1.12)	6.61 (1.43)	t	NS
Avg. water drunk (oz/day)	41.12 (20.73)	39.50 (28.25)	43.64 (24.18)	t	NS
Avg. exercise, outside of marching band (hrs/week)	3.14 (3.65)	2.66 (2.65)	3.92 (4.76)	t	.009**

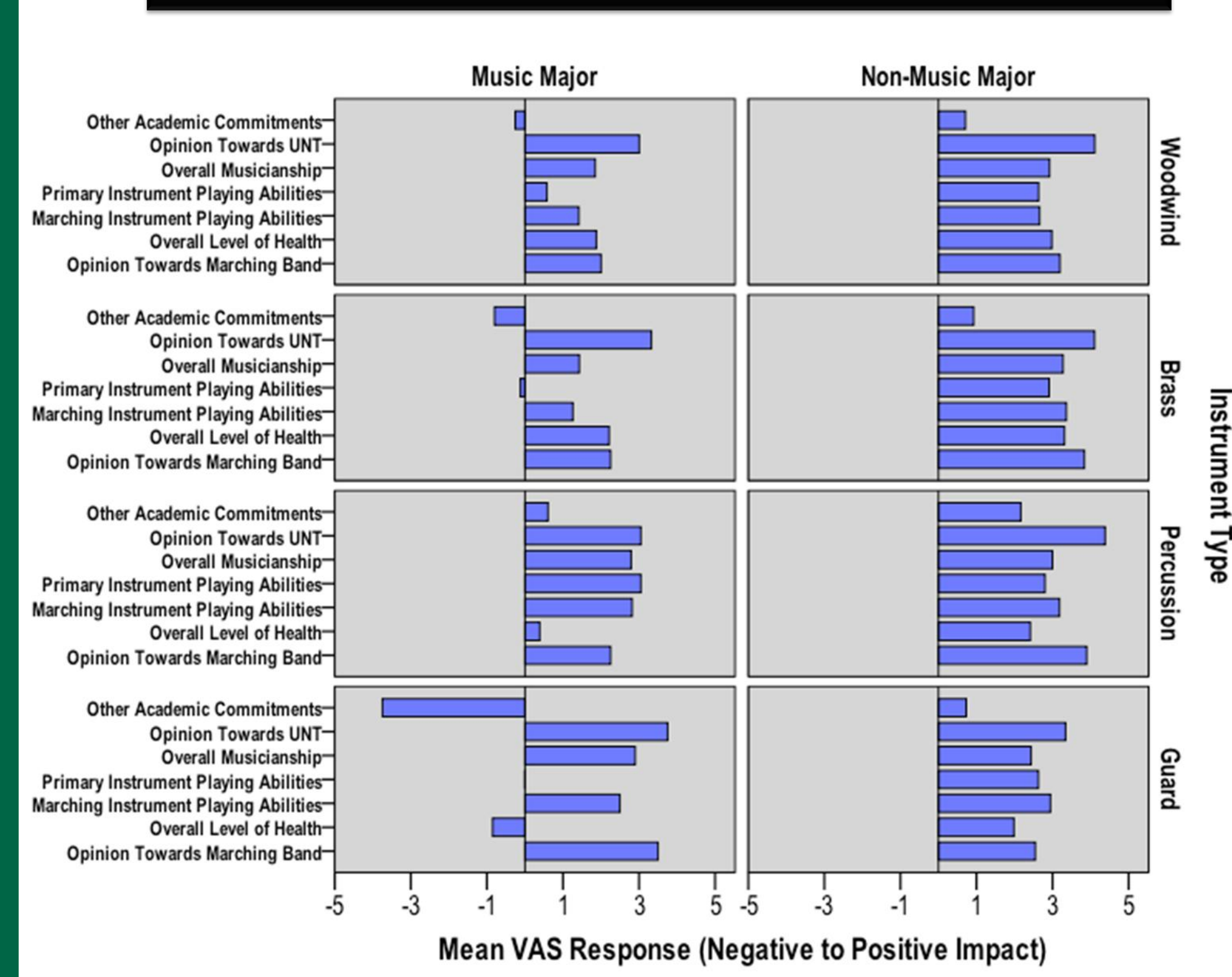
Table 2. Rehearsal Protocols, Music and Non-Music Majors

Variables	All	Music Major	Non-Music Major	Test	Sig.			
How often do you warm up before rehearsal?	6.38	6.20	6.69	7.28	5.88	3.84	t	NS
How often do you stretch before rehearsal?	8.18	8.18	8.19	8.22	8.16	8.01	t	NS
How often do you take breaks during rehearsal?	5.35	5.35	5.52	5.34	5.07	5.07	t	NS
How often do you bring water to rehearsal?	6.27	6.27	5.77	6.33	7.05	3.05	t	.003**
How often do you apply sunscreen during outdoor rehearsals?	1.93	2.76	1.86	2.72	2.04	2.84	t	NS
How often do you wear earplugs to rehearsal?	1.35	2.17	1.70	2.34	0.79	1.73	t	.002**
How often do you wear athletic shoes to rehearsal?	9.17	2.17	9.42	1.80	8.77	2.62	t	.022*
How often do you wear weather-appropriate clothes to rehearsal?	8.79	2.05	8.67	2.17	8.98	1.83	t	NS

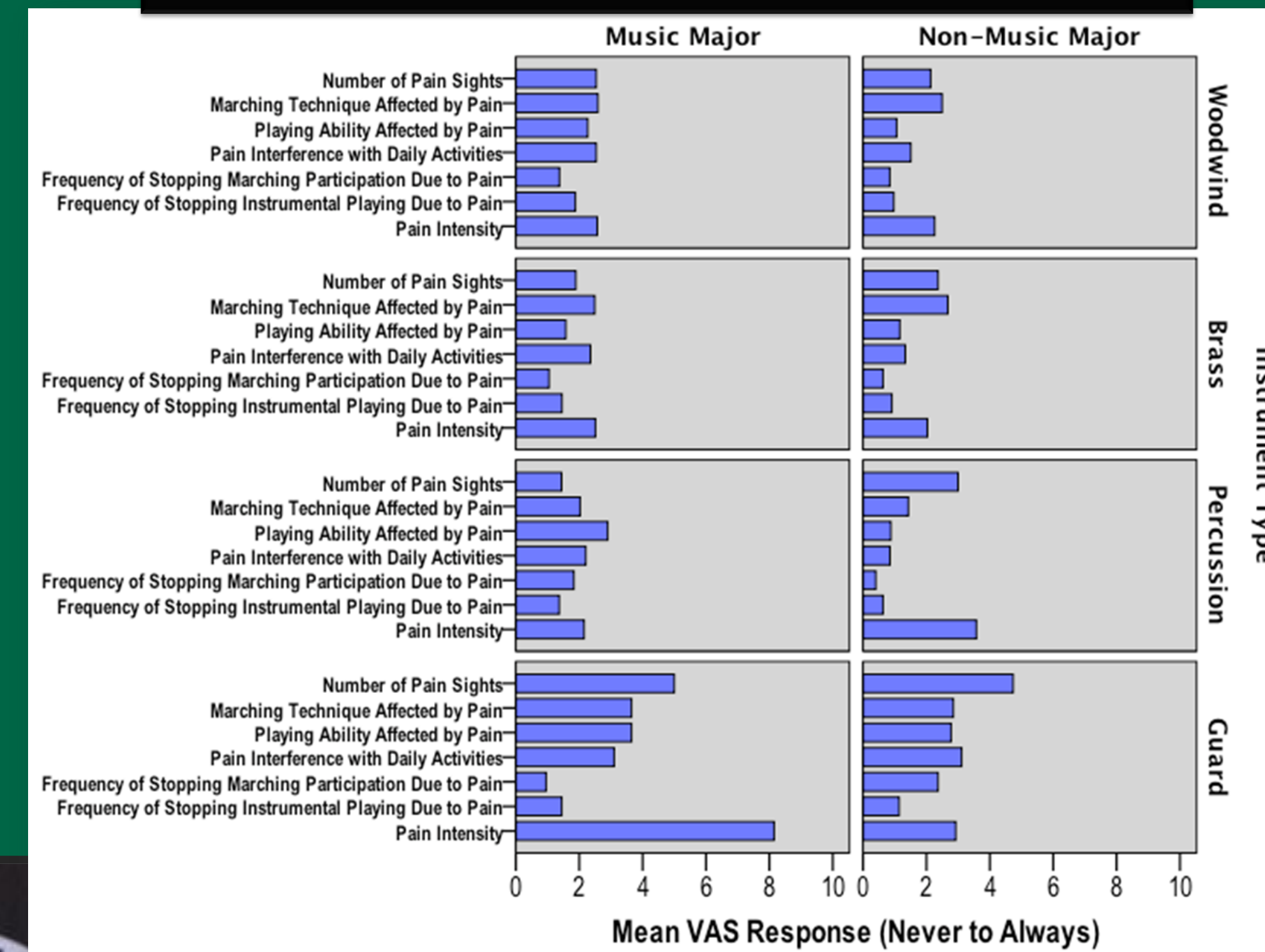
Table 3. Rehearsal Protocols by Instrument Groups

Variable	Woodwind		Brass		Percussion		Colorguard		F	ANOVA	Sig.
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
How often do you warm up before rehearsal?	6.25	8.87	6.37	3.42	7.67	3.06	6.76	3.51	0.22	NS	
How often do you stretch before rehearsal?	9.02	2.31	8.30	3.01	1.50	2.46	7.85	2.57	30.35	.000**	
How often do you take breaks during rehearsal?	5.48	3.28	5.21	3.43	5.57	2.55	5.53	2.90	0.16	NS	
How often do you bring water to rehearsal?	6.66	2.96	5.90	3.57	4.50	3.59	7.28	2.62	2.79	.041*	
How often do you apply sunscreen during outdoor rehearsals?	2.36	2.98	1.33	2.35	0.88	0.91	3.17	3.17	4.79	.003**	
How often do you wear earplugs to rehearsal?	1.47	1.95	1.08	2.02	4.45	3.83	0.22	0.50	12.22	.000**	
How often do you wear athletic shoes to rehearsal?	9.28	1.84	9.11	2.47	8.42	3.03	9.30	1.39	0.60	NS	
How often do you wear weather-appropriate clothes to rehearsal?	8.74	1.82	8.76	2.38	8.77	2.05	9.00	1.18	0.10	NS	

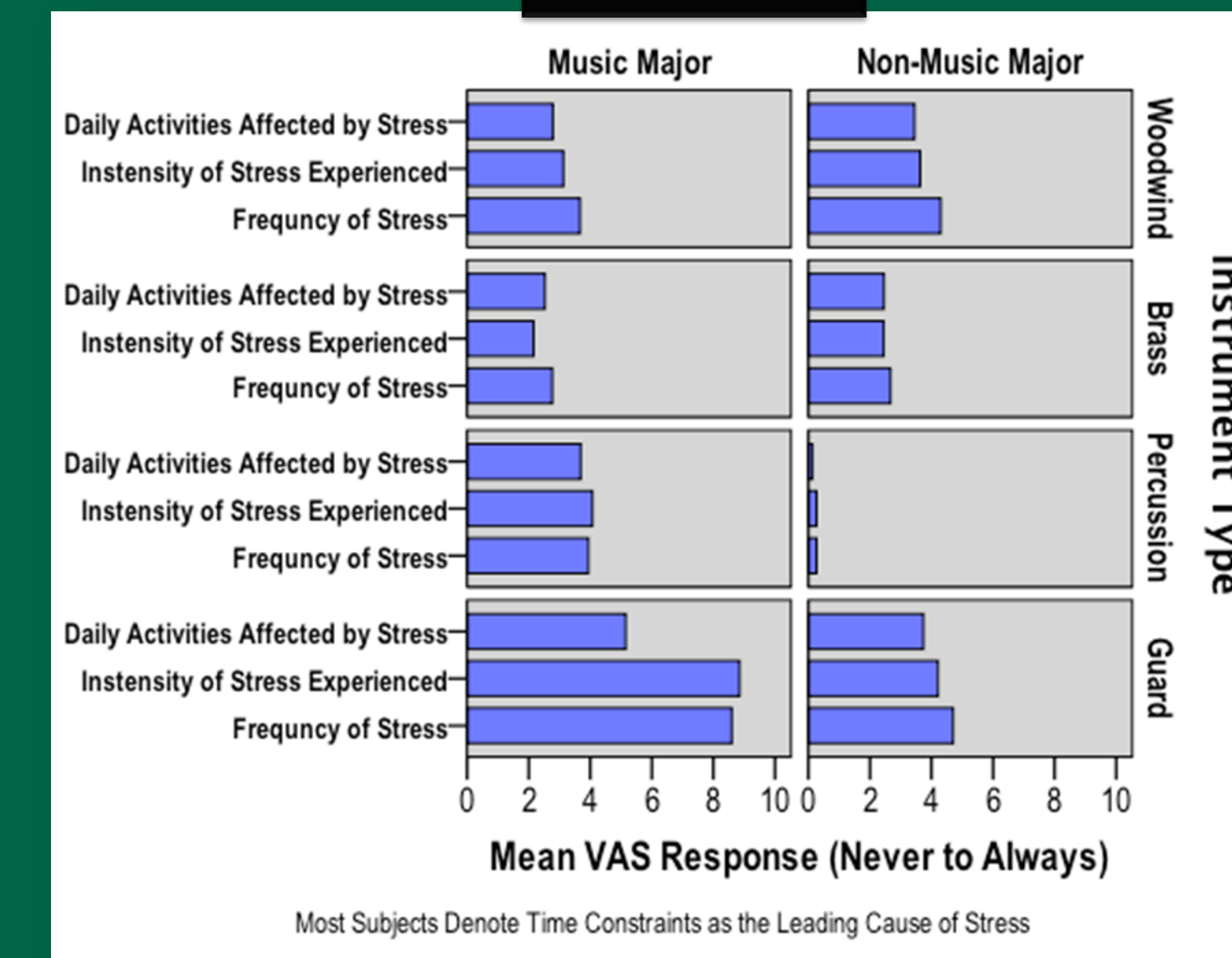
## Perceived Impact of Marching Band



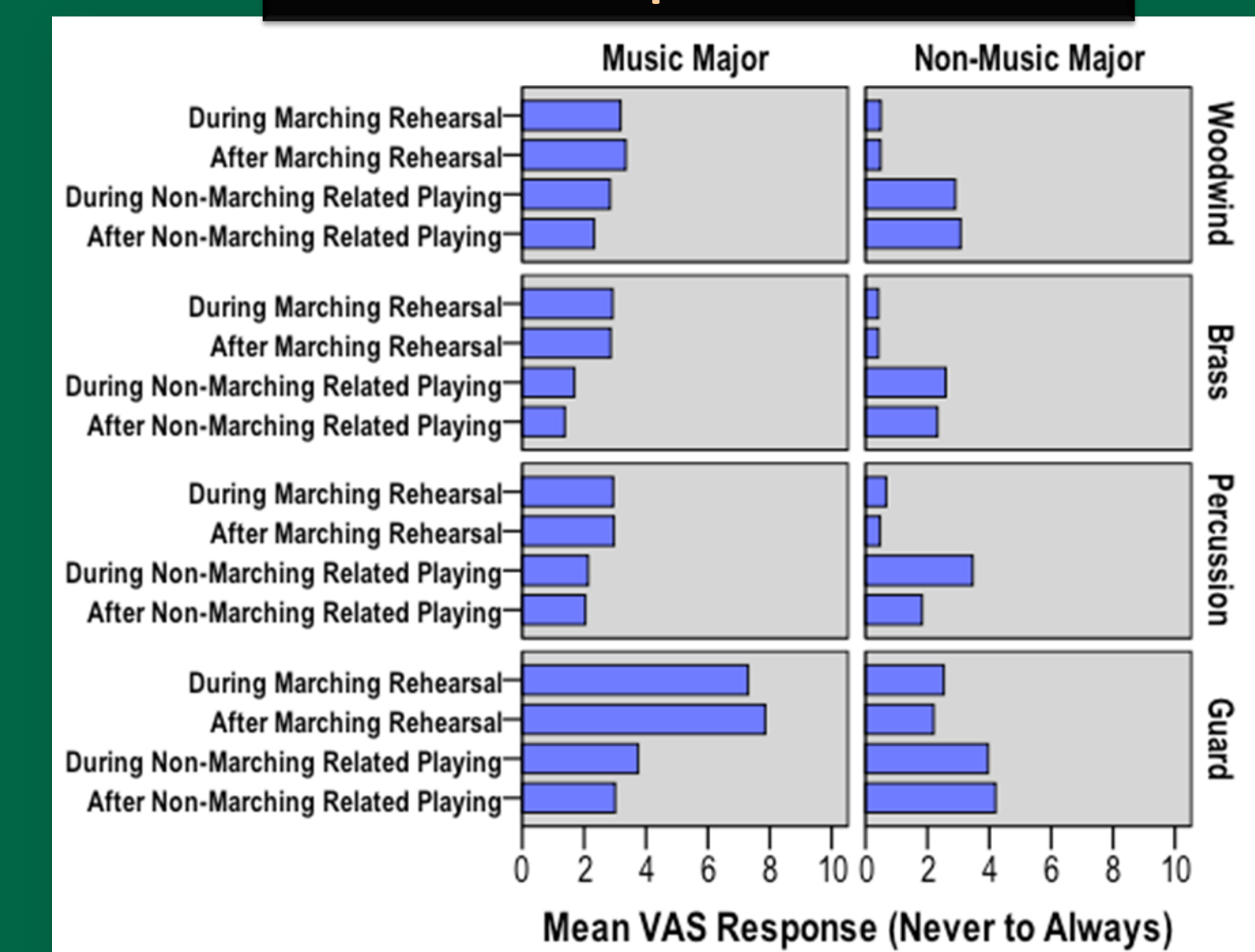
## Musculoskeletal Health



## Stress



## Pain Experienced



## RESULTS

Demographics and rehearsal protocols by collegiate major and instrument type (Tables 1-3) show that almost all color guard were non-music majors. Music majors reported less exercise per week and less likely to bring water to rehearsals than non-music majors. However, music majors were more likely to wear athletic shoes and use hearing plugs during rehearsal. Significant differences were observed across instrument groups for frequency of stretching before rehearsal, water use, sunscreen, and earplug use. Percussionists stretched much less compare to other groups. Mental stress issues, such as stress levels and opinions towards marching band show that the leading cause of stress was time constraints. Music majors in the color guard had the highest level of stress, while non-music major members of the percussion section had the lowest amount of stress. Music majors were more likely to have a negative opinion towards the impact of marching band on other academic commitments. Musculoskeletal pain occurs more often during and after marching rehearsals as opposed to non-marching related playing for all music majors. However, non-music majors report just the opposite, and show higher levels of musculoskeletal pain in non-marching related playing as opposed to marching rehearsals. In both music and non-music majors, color guard members report the highest levels of musculoskeletal pain in all areas. Lastly, hearing health issues are more prevalent in percussionists than any other instrumental section. Music majors report a greater impact on their playing ability and other daily activities as a result of this decrease in hearing quality.

## DISCUSSION

Marching band is different from participating in a "sit down" ensemble. Data from this study shows that more pain is experienced than other non-marching related ensemble. This study supports the idea that marching band is more physically demanding and therefore more risky for student musicians. At the University of North Texas, certain music degrees require participation in marching band for 2 or 3 years. This requirement is added to the other performance demands related to being a music major. This study suggests that these added stresses may increase the risk for musculoskeletal, audiological, and mental health problems among music majors. Health issues such as these can be detrimental to a musician's career and the influence of marching band is grossly understudied. Additional research is needed to further explore how best to teach marching band in a safe way for its participants. The question is not whether or not marching band should exist, but rather what pedagogical techniques create a safe environment for students that minimizes risk. It is the recommendation of the author that further research focus on the correlation between pedagogical choices and subsequent health issues related to marching band.

## Hearing Health

