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Justen Chatman
University of South Carolina - Upstate

Ming-Chi Sung
University of South Carolina - Upstate

Matthew Brisebois
University of South Carolina - Upstate

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COMPARING FITNESS DATA OF CADETS IN SOUTH CAROLINA TO THE GENERAL POPULATION: A PILOT STUDY

Justen Chatman¹, Ming-Chih Sung¹, and Matthew Brisebois¹

¹The University of South Carolina Upstate, Spartanburg, SC

INTRODUCTION

To prepare for physically challenging environments, it is expected that military personnel achieve higher levels of physical fitness than the general population. The recent COVID-19 pandemic impacted physical activity levels among many of America's youth, and thus, new recruits may be entering military service with lower fitness levels. It is also unknown how fitness levels of army cadets in upstate South Carolina compare to the general population. Therefore, the purpose of this pilot study was to compare anthropometric and fitness variables of army cadets from upstate South Carolina to data from the general population..

METHODS

A sample of 22 United States Army cadets (17.5 ± 1.3 y, female n = 7) from the Spartanburg, SC area completed various anthropometric and fitness measurements. Body fat percentage (BF) was measured using handheld bioelectrical impedance. Hand grip strength (HGS) was measured dominant (-D) and both (-C) hands using a handheld dynamometer. Vertical jump (VJ) was measured using an electronic jump mat. Height and weight were measured and body mass index (BMI) was calculated as weight (kg) / height (m)². BF, BMI, and HGS of the cadets were compared to age-matched adults from the National Health and Nutrition Examination Survey (NHANES) and norms from the American College of Sports Medicine (ACSM). Vertical jump data was compared to previous research conducted among young adults. Data were analyzed using t-tests.

RESULTS

There were no significant differences in BMI, HGS, and VJ between the cadets and the general population data. However, the cadets displayed significantly lower BF than the NHANES group (23.13 ± 6.57 vs. 28.46 ± 11.74 %, p = .0012). When analyzed separately, female cadets had a significantly lower BMI than the female NHANES group (22.88 ± 3.25 vs. 26.58 ± 7.72 kg/m², p = .024). Female cadets also had significantly lower BF than the female NHANES group (22.93 ± 6.46 vs. 37.57 ± 7.26 %, p < .0001). Male cadets had significant lower VJ performance compared to data from young males (18.67 ± 3.82 vs. 22.2 ± 3.5 in., p < .001). When compared to norms from the ACSM, 63.6% (n = 14) of cadets were classified as Overweight or Obese, 59.1% (n = 13) of cadets had Very Poor or Poor BF, and 27.3% (n = 6) cadets had Poor HGS.

CONCLUSION

United States Army cadets from upstate South Carolina may have similar overall anthropometric and fitness values to those of the general population. However, female cadets may exhibit lower BMI and BF, and male cadets may exhibit lower VJ performance. It is possible that increasing sedentary behavior, possible due to the COVID-19 pandemic, may have partially impacted the military readiness of South Carolina cadets. A larger study may be warranted to verify these findings.

Figure 1. BMI of Cadets vs. Norm

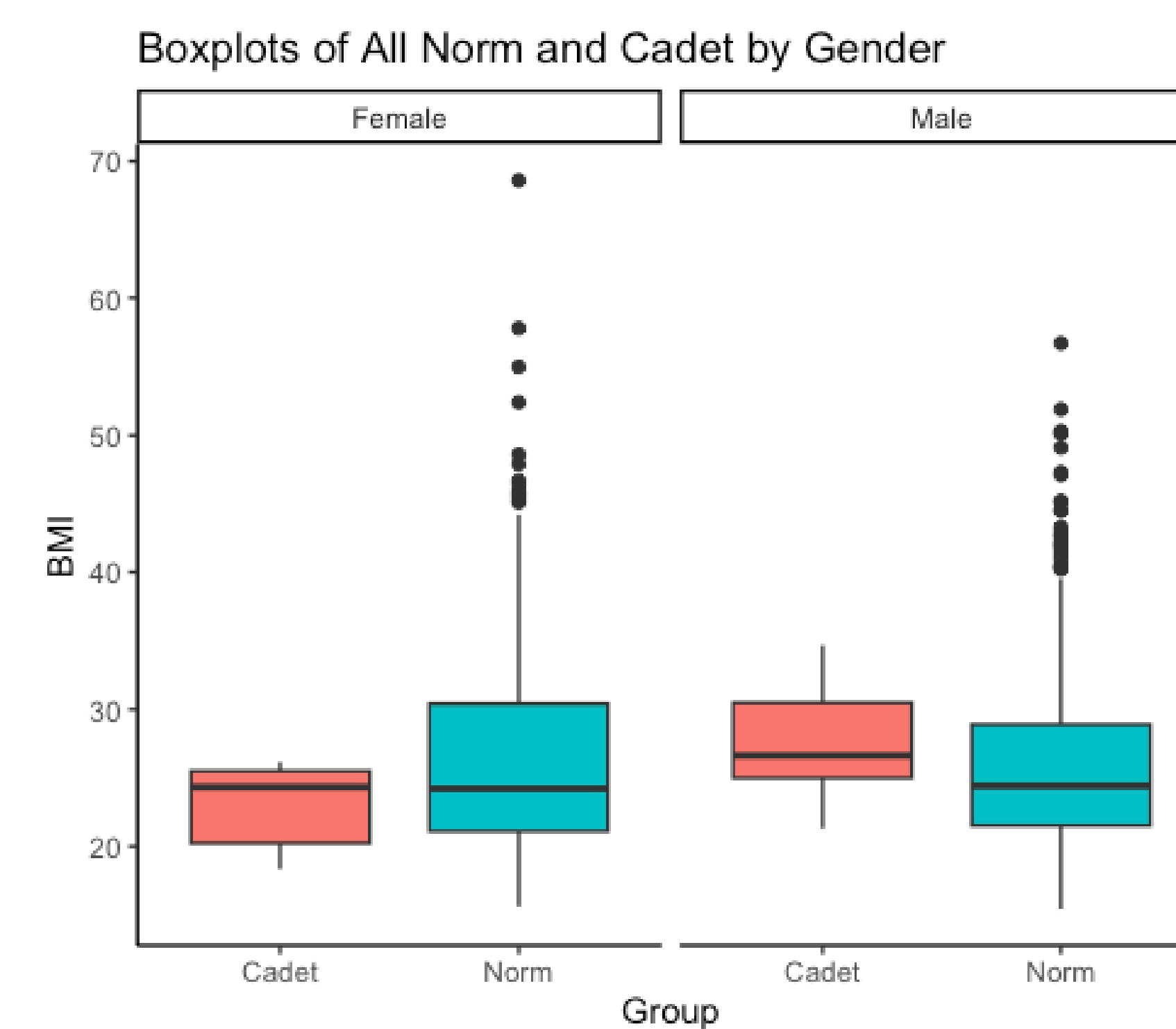


Figure 3. HGS-C of Cadets vs. Norm

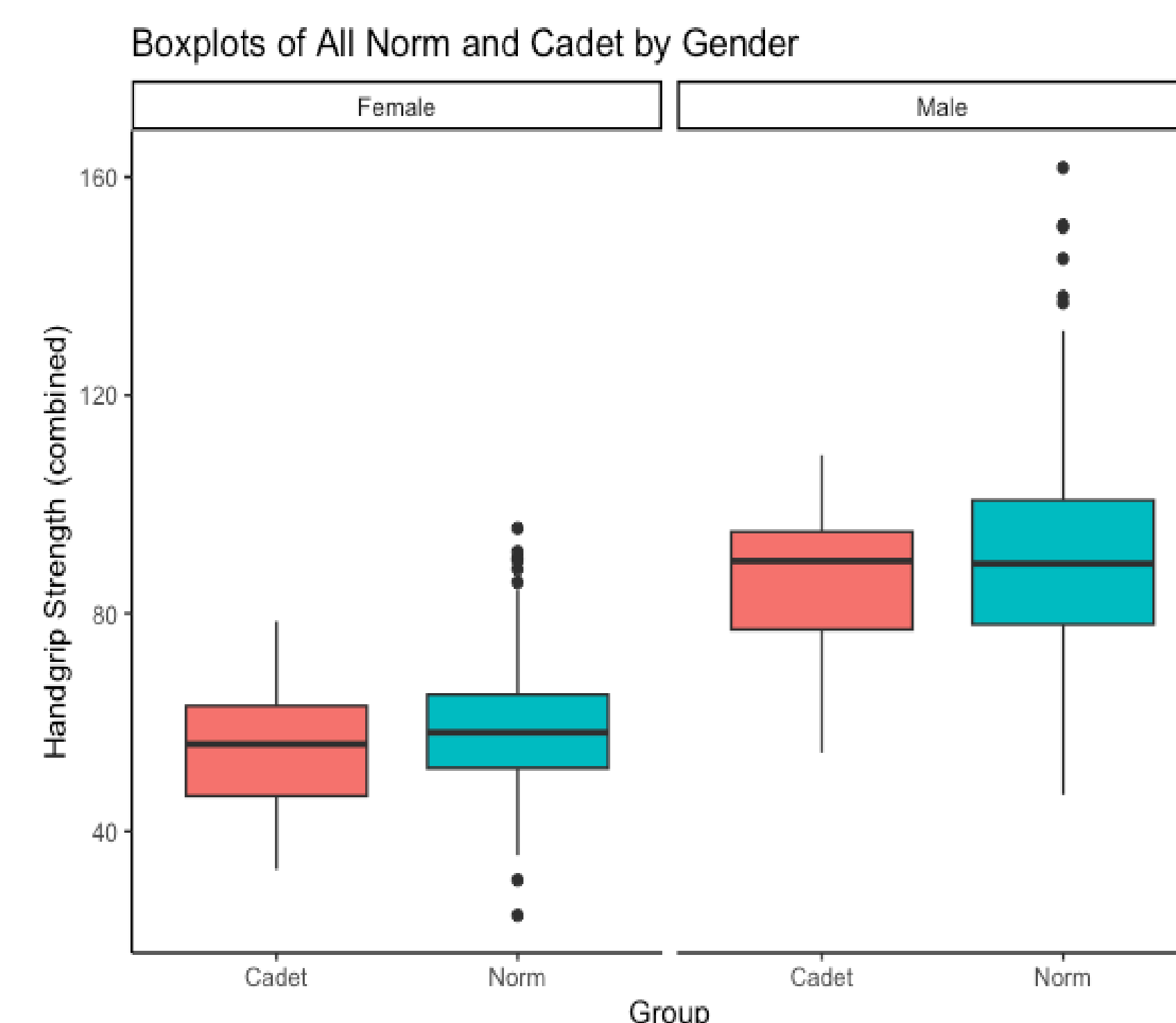


Figure 2. BF of Cadets vs. Norm

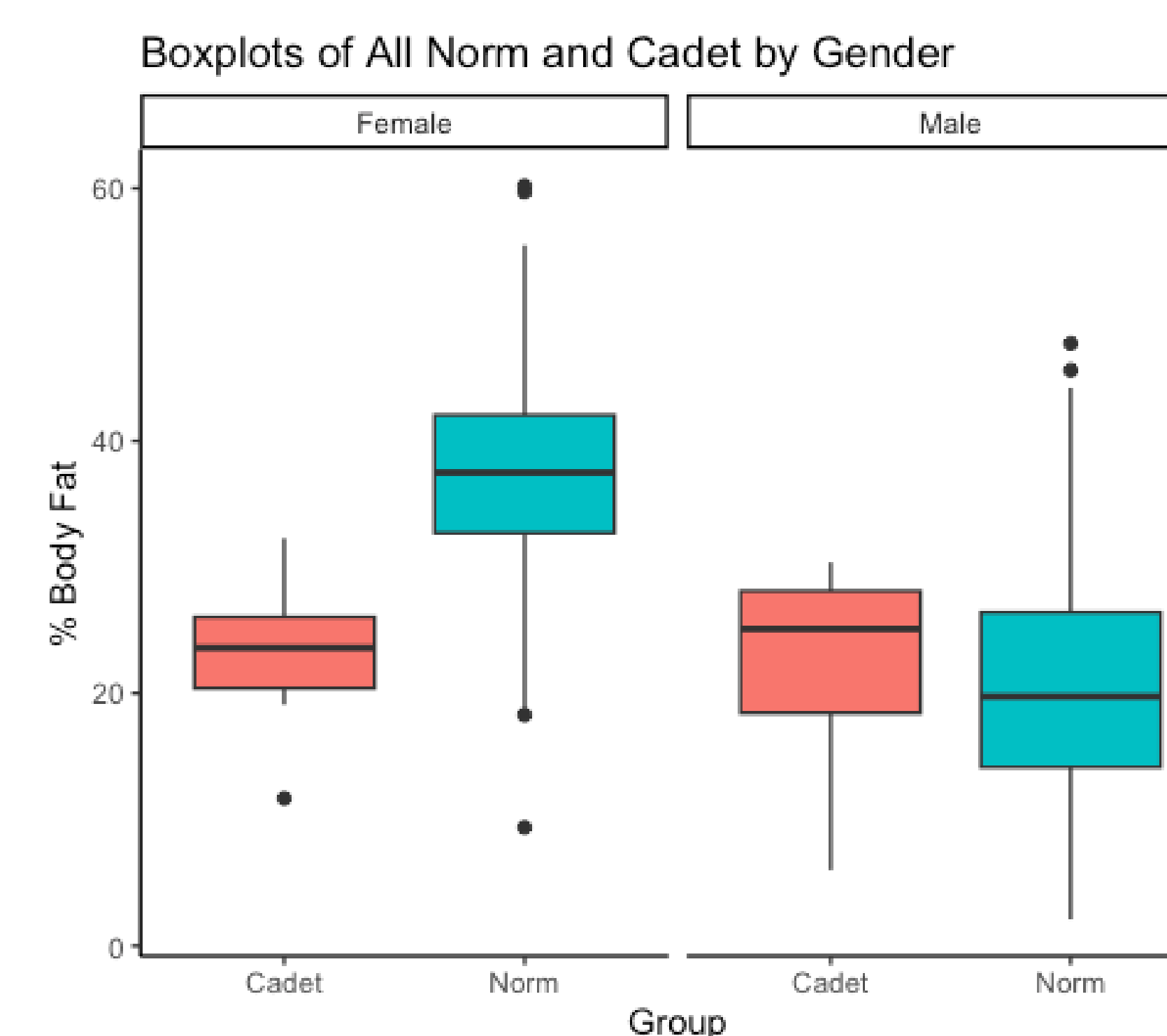


Figure 4. HGS-D of Cadets vs. Norm

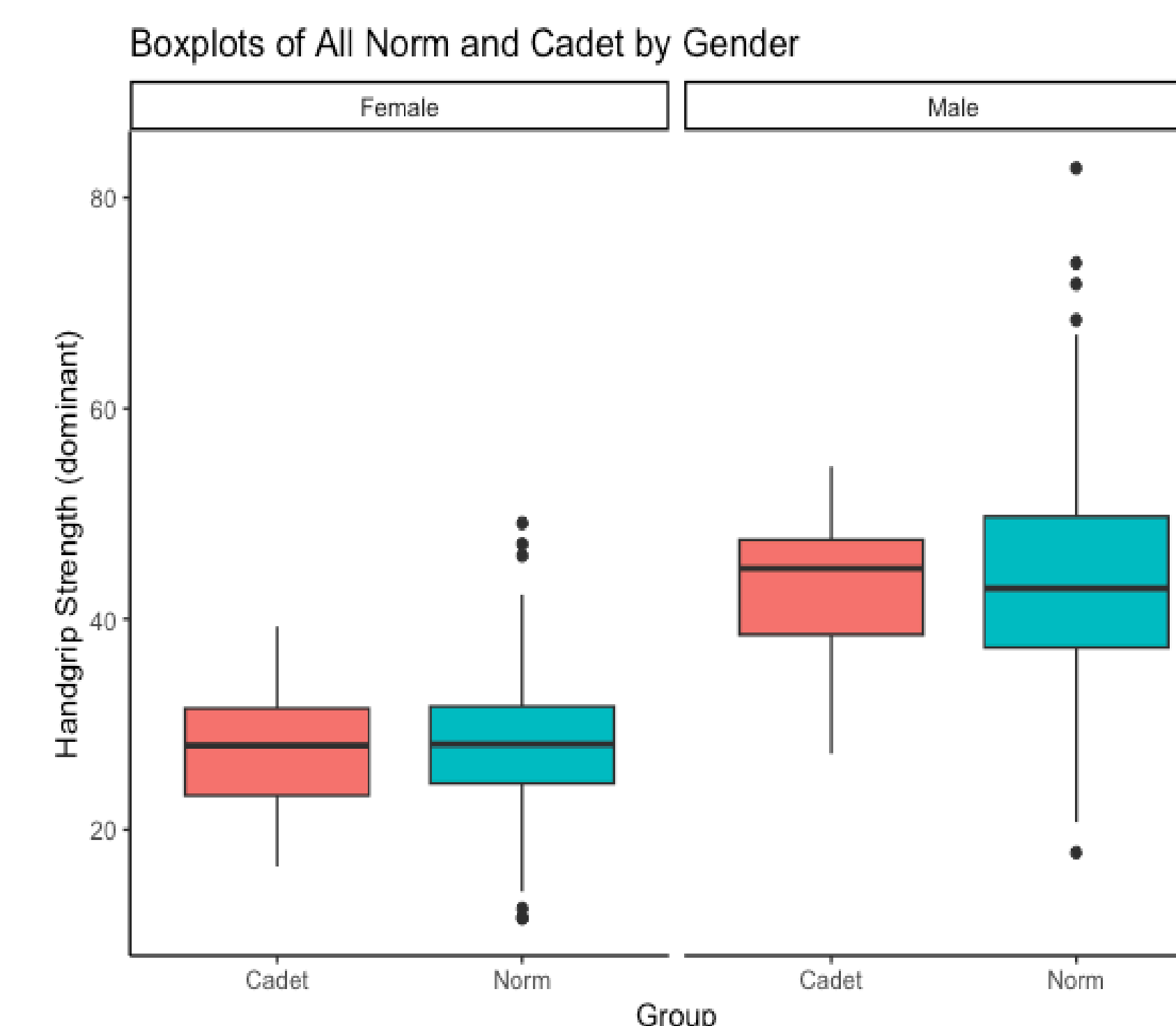


Table 1. Cadets vs. Norm - Males

	Cadet (n = 15)	Norm	p
Height (m)	1.74 ± 0.08	1.75 ± 0.08	0.825
Weight (kg)	83.72 ± 13.47	80.28 ± 23.11	0.567
BMI (kg/m ²)	27.56 ± 4.03	26.19 ± 6.82	0.226
Body fat %	23.22 ± 6.85	20.42 ± 8.67	0.215
Handgrip strength combined (kg)	83.99 ± 16.18	90.02 ± 17.50	0.189
Handgrip strength dominant (kg)	41.99 ± 8.09	43.70 ± 9.44	0.489
Vertical jump (in)	18.67 ± 3.82	22.20 ± 3.50	.0002

Table 2. Cadets vs. Norm - Females

	Cadet (n = 7)	Norm	p
Height (m)	1.62 ± 0.08	1.62 ± 0.06	0.911
Weight (kg)	60.18 ± 9.55	69.87 ± 21.46	0.234
BMI (kg/m ²)	22.88 ± 3.25	26.58 ± 7.72	0.024
Body fat %	22.93 ± 6.45	37.57 ± 7.26	<.0001
Handgrip strength combined (kg)	55.23 ± 14.95	58.56 ± 10.41	0.405
Handgrip strength dominant (kg)	27.61 ± 7.47	28.36 ± 5.75	0.736
Vertical jump (in)	13.90 ± 2.23	14.10 ± 2.50	0.835