**TACSM Abstract**

**Physiological Variation in Collegiate Division I Football Players During Different Seasons of Play**

JEREMY G. CARTER¹ and KELLY A. BROOKS²

¹Department of Kinesiology; Texas A&M University; College Station, TX
²Department of Kinesiology; Texas A&M University-Corpus Christi; Corpus Christi, TX

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**ABSTRACT**

Physiological variables of college football players during a game have been difficult to measure. Data collection is often difficult due to participants who may perceive interference in performance due to methods of collection. The purpose of this study was to observe the physiological response of Division I football players during various seasons of play including a spring football game (SP), a fall scrimmage (FA), and a summer two-a-day practice (SU). Participants included eight Division I collegiate football players (age = 20.72 ± 0.51 yr., height = 184.76 ± 4.27 cm, weight = 102.94 ± 18.10 kg) who competed throughout the season. Originally, there were 17 participants, but injury and lack of adherence lowered the number of players who finished. Of the 8 participants, 4 were classified as linemen and 4 participants were classified as backs. A monitoring device was used to measure instantaneous heart rate (HR), respiratory rate (RR), and skin temperature (T). All participants were medically cleared prior to being involved in the study. Maximal values for each quarter were calculated, as well as the average value over the first quarter of the total time of play. Overall, there were no significant differences found between maximal values obtained for each variable over for SU, SP, and FA. Significant differences (p < 0.05) were observed between FA and SU during the third and fourth periods for average HR (175 bpm), RR (33 bpm), and T (40.6 degrees Celsius), with all variables being significantly larger during SU. When classifying players as lineman or backs, results indicated the lineman had significantly higher temperatures throughout the game, each season, with SU being where the highest values were reached. There were no significant differences between SU and SP. Division I collegiate football seasons are played primarily during fall, when the temperature differs from SU, and possibly from SP. More injuries are reported per play during spring practice, and heat-related complications occur most often during SU than at any other time of the season. Having physiological data to compare times of the year may provide insight into injury and heat-related illness prevention.