PURPOSE: GPS-based analyses of movement patterns are inadequate for quantifying the physical stress imposed on athletes in contact sports. Accelerometers may be useful for monitoring such athletes. The primary purpose of this study is to use triaxial accelerometers to record G-force exposure in Gaelic football players during games and practices.

METHODS: A small triaxial accelerometer (mass 5 g) was fitted to the waistband of players' shorts. Data was collected from 19 club level players (age 25±7 yr). Game data were recorded from 19 club level players (age 25±7 yr). Training data were recorded from 8 players. Accelerometer data was rectified, summed for the 3 planes of motion, and expressed as G-force (baseline: vertical=1, frontal and sagittal=0). For the summed data, time spent at less than 20, 20-30 and greater than 30 G was categorized as low, moderate, and high G-force exposure, respectively. Player positions were categorized as central (half back/half forward/midfield) and peripheral (full back/full forward) with central players typically more involved in continuous running. ANOVA with Bonferroni corrections was used to compare G-force exposure in games vs. practice and between central vs. peripheral players (practice not position dependent).

RESULTS: Overall, most time was spent at less than 20 G with much activity at 30G (Fig. 5). Based on these distributions, analyses were subsequently made on time spent at less than 20 (Low), 20-30 (Moderate) and greater than 30 G (High). Since practices and games were of different durations, Low, Moderate and High G-force exposure is displayed as relative time (Fig. 6). Overall, 7.0% of game time was spent at high G-force, with 11.7% at moderate and 81.3% at low.

DISCUSSION: Accelerometry analysis was effective in distinguishing position-dependent physical demands in contact sport athletes. The absence of position-dependent effects in horizontal planes indicates that cutting, pivoting and physical contact (accelerations in the horizontal planes) were not different, positions. Accelerometer data were rectified, summed for the 3 planes of motion, and expressed as G-force (baseline: vertical=1G, frontal and sagittal=0G). For the summed data, time spent at less than 20, 20-30 and greater than 30 G was categorized as low, moderate, and high G-force exposure, respectively. Player positions were categorized as central (half back/half forward/midfield) and peripheral (full back/full forward) with central players typically more involved in continuous running. There are 15 players on a Gaelic football team (including one goakeeper) and the field is between 130 and 145 m long by 80 to 90 m wide (Fig. 4).

A small triaxial accelerometer (mass 5 g) with a flash memory chip data logger (Arvivity, Newcastle, UK) was fitted to the center-rear of the waistband of players’ shorts. Data were acquired at 100 Hz (scale ±16G). Game data were recorded from 19 club level players (age 25±7 yr). Training data were recorded from 8 players. An example of the raw data from one player in a game is shown (Fig. 3).