Title: The Impact of Student Attendance on Assessment Specific Performance in Sport Degree Programs

Word Count: 5186

ABSTRACT

This study aimed to assess the relationship between attendance and module assessment performance across three Sport degree programs. Undergraduate students (n=256) from three level 4 sport degrees (Sport Therapy (ST): 83; Sport and Exercise Sciences (SES): 80; Sports Development and Management and Coaching (SDMC): 93) participated in this 12-week prospective study. The assessments consisted of a practical for ST, exams and laboratory reports for SES, and presentations and essays for SDMC. A significant correlation was identified for attendance and overall performance across all degrees, although this was weak (r_s= 0.327, p <0.001). These findings suggest attendance positively correlates with assessment performance. All assessment types significantly and positively correlated with assessment performance. The study also reports that regardless of assessment type, attendance over a threshold of over 75% led to significantly higher assessment performance compared to those that did not achieve this threshold.

Key words: higher education, pedagogy, evaluation, undergraduate

1   **INTRODUCTION**

2   The landscape of Higher Education (HE) has continued to change over the last decade with

3   applications continuing to rise in the UK, despite the increase in tuition fees in 2012. The total

4   number of applicants to UK universities rose from 589,750 to 626,360 between the years 2013

5   and 2016 (UCAS, 2017). Brennan, Durazzi and Tanguy (2013) outline that HE aims to

6   disseminate and advance knowledge through teaching and learning. A factor that may

7   compromise this impact of HE is attendance, which has been implicated to hamper assessment

8   performance and overall student engagement (Gbadamosi, 2015). There has been a growing

9   view in HE as a result that student attendance is a concern (Massingham and Herrington, 2006).

10 It is thought that student attendance is central to student performance and is likely to increase

11 their chances of fulfilling their academic potential when they attend consistently (Durden and

12 Ellis, 1995). Furthermore, with the recent developments within the Teaching Excellence

13 Framework (TEF), lecturers, guided by institutional policy have a responsibility to ensure

14 engagement with modular activity and this will be criteria for assessment.

15

16 Attendance in lectures and seminars are considered important as they contribute to the

17 transition from surface learners (through secondary school and further education) to deep

18 learning in HE (Donnison and Perry-Edwards, 2012). It is claimed that through frequent

19 absenteeism students find it difficult to build the necessary skills and knowledge required to

20 succeed in their chosen area of study (Aden, Yahye and Dahir, 2013). Indeed, many UK HE

21 institutions implement attendance regulations that are typically outlined in the Module

22 Handbook or student contract. For example, these regulations may specify that two

23 consecutively missed sessions will result in a meeting to monitor progress. Furthermore, in

24 some cases students who fail to attend at least 75% of the sessions provided, regardless of grade

25 outcome, may be required to repeat the module in the following year. It is worth noting,

26 however, there is no consistency in UK HE institutions and attendance monitoring, but these

27 processes clearly have implications on student progression in their degree program.

28 Nonetheless, it also outlines the importance which universities now attach to attendance and is

29 perhaps guided by the findings of recent studies which have found student attendance impacts

30 upon student performance (Durden and Ellis, 1995; Stanca, 2006; Gottfried, 2010).

31

32 A study by Gottfried (2010) supported the link between attendance and achievement displaying

33 a positive and statistically significant regression (R^2 0.40, p <0.001), though this was in

34 elementary and middle school students. Interestingly, whilst Durden and Ellis (1995) found

that higher attenders achieve better course grade averages, the effect was nonlinear suggesting some high attenders do not necessarily achieve a high assessment grade, and vice versa. Their evidence suggested that the academic achievement of students was only hampered for those who missed in excess of four classes across the semester. The authors therefore suggested that a 'threshold effect' was present meaning students could afford to miss up to four sessions before their assessment performance were negatively affected. This perhaps justifies the common use of attendance thresholds at HE institutions in the UK, including the 75% threshold enforced at Edge Hill University, for example. A difficulty of quantifying the relationship of attendance on assessment performance is that the type of assessment (i.e. exam, laboratory report, essay and practical) is seldom considered, which plausibly can have an effect on the overall relationship.

Stanca (2006) found that student attendance at both lectures and classes/seminars, which is perhaps important in a HE context, had a significant impact on performance of an exam assessment. Deane and Murphy (2013) progressed this by investigating whether undergraduate student attendance impacted upon an overall assessment score, comprising results from a multiple-choice exam, six short-answer questions, and an oral examination. They discovered that attendance significantly impacted upon final grades, with distinction grades being awarded in isolation to those who achieved attendance of at least 80%. Moreover, the majority (60%) of students who failed to achieve a pass grade were those who attended less than 80% of the sessions provided. This adds support to the 'threshold effect' proposed by Durden and Ellis (1995), although Deane and Murphy (2013) sample comprised of medical students and little is known as to whether this effect is present in sport students. Furthermore, whilst these results indicate that attendance can impact the results of a final grade comprising of results from a variety of assessments, there appeared to be no effect between the assessments investigated. Despite no effect between the different types of assessment in the analysis by Deane and Murphy (2013), a study by Furnham et al. (2007) did display students from British and American universities preferred a multiple-choice exam compared to other types of assessment (timed written paper, oral examination, continuous assessment, dissertation or group work). This relationship was also observed in a similar study (Chamorro-Premuzic et al., 2005) within a group of Australian undergraduates. Yet, students also reported that a multiple-choice exam was not a true reflection of their ability.

68 One suggestion for a bias towards multiple-choice exam assessments is that students are only
69 required to adopt surface learning, with those who adopt a deep learning strategy being at a
70 disadvantage (Scouller, 1998). Furthermore, the previous experience of students exposure to
71 education in secondary school and further education is arguably largely indicative of a surface
72 learning approach, resulting in an under-development of deep learning; leading some to even
73 question if this was even initiated (Donnison and Perry-Edwards, 2012). Nevertheless, students
74 who adopt a deep learning strategy typically perform better in essay type assessments which
75 are perceived as assessing higher levels of cognitive processing and are integral to success in
76 the latter years of an undergraduate degree (Scouller, 1998). Furnham et al. (2008) revealed
77 that those students who preferred multiple-choice exam assessments were commonly surface
78 learners, whilst deep learners were in favour of essay style assessments such as final
79 dissertations. It is unclear how student attendance relates to this however, if at all. Some have
80 suggested that students are only interested in attending to ensure they obtain sufficient
81 information to assist them with their assessments and exam questions (Murphy, 1998; Browne
82 and Race, 2002; Exley and Dennick, 2004). Despite this, little is known in relation to how this
83 attendance relates to student performance across the different type of assessments performed,
84 particularly in Sport and Exercise Science.
85
86 Whilst factors such as self-efficacy have been examined in relation to its impacts on student
87 performance on sport degree programs (Lane, Hall and Lane , 2004), few have examined the
88 relationship between attendance and student assessment performance in these degree programs.
89 The aim of the current study is to, therefore, investigate the relationship of student attendance
90 on overall assessment performance across a combination first year sport degree modules
91 including Introduction to Anatomy and Physiology in ST, Introduction to Sport Policy and
92 Development in SDMC and lastly, Physiology and Nutrition in SES. A secondary aim of this
93 study is to investigate how overall attendance influences assessment performance of specific
94 assessments, namely: multiple-choice exam, essay, individual presentation, laboratory report,
95 and practical exam. Finally, the current study will look to understand whether there is a
96 'threshold effect' in relation to overall attendance and sport students assessment performance,
97 in line with institutional policy.
98
99 **METHODS**
100 **Setting**

101 This was a prospective cohort study which was conducted within a UK based HE institution.

102 All students were enrolled students on a Sports based degree on a full-time basis for three years

103 at the time of the study data collection (2016). All degree types in used in the study were

104 Bachelor of Science degrees (BSc). This entailed attendance to 24 sessions across 12 weeks

105 and two examinations in each respective module. Each session entailed a two-hour lecture (1

106 session) and a one hour seminar/workshop (1 session). A hard copy of lecture slides is only

107 provided during the lecture and are not recorded or online until after the lecture in order to

108 encourage attendance. There is also a requirement of all the students on this program to attend

109 at least 75% of sessions. The second assessment was excluded from ST on the grounds it was

110 the same type of assessment in SES (i.e. exam).

111

112 **Participants**

113 Ethical approval for the present study was initially obtained from the University Research

114 Ethics Committee. Attendance and assessment performance data for ST, SES and SDMC level

115 4 students during the 2016-17 academic year was obtained from the Department. Students were

116 first year full-time undergraduates of a three year degree program. All personal and student

117 demographics were removed prior to statistical analysis for participant confidentiality. The

118 inclusion criteria of this present study required all students to complete the specific module

119 assessments, and were registered for the entire 12 weeks that the module was delivered. Any

120 students who did not meet these criteria were removed from the analysis.

121

122 **Data Collection**

123 Student attendance was calculated from a paper-based log-book that the students complete at

124 the commencement of each session. This was then transferred into an online log-system used

125 by the Department to monitor attendance. All data for grade performance was obtained

126 subsequent to publishing all module grades and was obtained from the Department. To identify

127 the assessment specific relationships with attendance, all degree programs included in the

128 present study were all different summative assessments. Specifically, these included a practical

129 assessment for ST, laboratory report and written examination for SES and presentations and

130 essays for SPMC. The overall performance from ST, SES and SDMC were also included for

131 analysis. The written examination for SES was primarily multiple-choice questions and a small

132 number of short answer questions and labelling diagrams.

133

134 **Statistical Analysis**

135 Assessment and attendance data were initially inputted into Microsoft Office Excel, where all
136 data were represented as a percentage on a 100-point scale. Descriptive statistics were used to
137 describe the student population, student attendance and academic performance (i.e. mean,
138 median, standard deviation, interquartile range). Normality was assess using the Shapiro-Wilk
139 statistic, where the assumptions with normality were violated for attendance ($p = 0.045$) and
140 performance in assessments ($p <0.001$). Therefore, Spearman's rank correlation was used to
141 identify the relationship (r_s) between overall attendance and overall assessment performance
142 across all degree programs, and the specific assessment types within the degree program. The
143 strength of the relationships were categorised as very week (0.00-0.19), weak (0.20-0.39),
144 moderate (0.40-0.59), strong (0.60-0.79) and very strong (0.80-1.00) (Hopkins, 2000). To
145 determine whether the 75% attendance metric affects assessment performance, a Kruskal-
146 Wallis H test was used to identify differences between students with low attendance (<75%)
147 and high attendance ($\geq$ 75%). All assumptions associated with the aforementioned statistical
148 tests were not violated. Specifically, initial analysis identified the relationship was monotonic,
149 assessed by visual inspection of a scatterplot from the Spearman's rank correlation. For the
150 Kruskal-Wallis H test, the distributions of the attendance values were comparable for both
151 groups as identified by visual inspection of a boxplot. All statistical analyses were completed
152 using PASW Statistics Editor 22.0 for windows (SPSS Inc, Chicago, USA). Statistical
153 significance was set at $p \leq 0.05$. All data is reported as mean ± standard deviation (SD) unless
154 otherwise stated (median and interquartile range [IQR]).

155

156 **RESULTS**
157 **Descriptive Analysis**
158 A total of 256 students from three level 4 sport degrees (ST: 83; SES: 80; SDMC: 93) that
159 completed all module assessments for the specific degree program were included for further
160 analysis in this study (Table 1). The study sample included low attenders (<75% n= 81) and
161 high attenders ($\geq$75%; n = 175). Table 1 present the mean and SD of overall attendance and
162 performance with addition to assessment specific performance. Overall, the ST students
163 achieved the highest attendance and performance values compared to the other two modules
164 included in this study.

165

166   ***Table 1 near here***

167

168 **Correlation**

5

169 All correlations were significant and positive. For overall attendance and overall performance
170 across the degree programs, a significant correlation was identified (r_s= 0.327, p <0.001). When
171 this analysis was considered for the specific type of degree and assessment, the relationship for
172 ST degree program, overall attendance and practical performance was also significantly
173 correlated (r_s= 0.277, p = 0.011). For the SES degree program, overall attendance was
174 significantly correlated with laboratory reports (r_s= 0.467, p <0.001) and exam performance
175 (r_s= 0.508, p <0.001). For the SDMC Degree program, overall attendance was significantly
176 correlated with presentation performance (r_s= 0.415, p <0.001) and essay performance (r_s=
177 0.441, p <0.001).

178

179   ***Figure 1 near here***

180

181 **Attendance Based Performance**
182 A significant difference was identified by the Kruskal-Wallis H test (X^2 (1) = 10.33, p = 0.001)
183 between low attenders (<75% n= 81; Median = 48, IQR 15%) and high attenders (≥75%; n=
184 175; Median = 55, IQR 21%) was observed for overall module performance across all degree
185 types (Figure 2).

186

187   ***Figure 2 near here***

188

189 **DISCUSSION**
190 This study primarily aimed to investigate if student attendance correlates with assessment
191 performance within first year sport undergraduate degree programs. A second aim of this study
192 was to investigate the attendance-assessment relationship upon distinguishing between
193 different types of assessment. Lastly, the study also investigated the importance of an
194 attendance threshold of at least 75%, as this was the attendance policy adopted by the institution
195 used in the study. The primary finding was that attendance positively and significantly
196 correlates with assessment performance in all types of assessment, albeit with a weak
197 relationship and one that is non-linear. Upon separating for degree type and assessment type
198 however, attendance showed a greater positive relationship with assessment performance in
199 SES degree programs completing exam and laboratory reported assessments. This relationship
200 was stronger (moderate relationship in both assessments) compared to ST completing practical
201 assessments (weak relationship). Whereas, SDMC who completed individual presentations and
202 essays displayed similar correlations to SES, although they were marginally weaker. A unique

203 finding of this study was that attendance greater than 75% resulted in significantly higher
204 assessment performance compared to those who attended less than this threshold of sessions
205 across all Sport degree programs, akin to findings in other research investigating medical
206 undergraduate students (Durden and Ellis, 1995).

207

208 **Overall attendance – assessment performance relationship**
209 The relationship between attendance and overall assessment performance is weaker than some
210 (Aden et al., 2013; Deane and Murphy, 2013; Cohall and Skeete, 2012) but not all previous
211 research (Horton et al., 2012; Gatherer and Manning, 1998; Riggs and Blanco, 1994). Aden et
212 al. (2013) for instance, reported a strong positive correlation between attendance and
213 assessment performance ($r = 0.72$, $p < 0.001$) within a group of undergraduate Business and
214 Accounting students within a Somalian institution. In contrast, the present study revealed only
215 a weak relationship across all degree programs considered in this study. Likely factors to
216 explain the differences are the institutional location (Somalia vs. UK) and degree courses being
217 investigated (Business and Accounting vs. Sport Sciences). The findings from the University
218 of Dublin, which shares United Kingdom (UK) educational policy were more similar to the
219 current study, displaying attendance was positively and moderately correlated with assessment
220 performance ($r = 0.59$, $p < 0.001$) in a Medicine degree program (Deane and Murphy, 2013).
221 This investigation was only conducted over an eight-week module however, which may explain
222 why the correlation was stronger than the present study consisting of 12 weeks. In arguably the
223 most alike cohort available in the literature, weaker relationships were observed between
224 assessment performance and attendance ($r = 0.21$, $p < 0.02$) within a group of 120 second year
225 physiology degree students (Horton et al., 2012). To corroborate these findings, other studies
226 of a Science and/or Medicine specialism have also displayed similar weak correlations ($< r =$
227 0.39) between attendance and assessment performance (Gatherer and Manning, 1998; Riggs
228 and Blanco, 1994). In combination, this suggests that attendance has a weaker influence on
229 assessment performance in the Sciences compared to other disciplines. These observations are
230 only reflective of one year of the three-year degree cycle therefore further research may
231 consider the impact of attendance on such a time frame to gain a better understanding of the
232 potential impact of attendance on assessment performance.

233

234 **Degree and assessment specific attendance – assessment performance relationships**

235   There is a paucity of research evaluating the relationship between attendance on different types
236   of assessment, and the present study's degree and assessment specific findings display
237   contrasting themes compared to the analysis on an overall level. This highlights the need for
238   future research to investigate the effects of attendance on individual assessments and degree
239   programs, therefore avoiding a holistic approach and the reducing the risk of missing
240   potentially important findings. Of note, the strongest correlation was observed for exam
241   performance in SES. The teaching pedagogy in first year undergraduate programs in SES is
242   aligned to a tendency of surface learning due to one of the assessments entailing the completion
243   of an exam. This is considered a valid approach to ease the transition from surface learning
244   during secondary school and further education to deep learning during second and third year
245   of undergraduate study (Donnison and Perry-Edwards, 2012). It is likely therefore the greater
246   amount of sessions a student attended, combined with the pedagogical approach of surface
247   learning, the greater this impacted on exam performance. A similar positive moderate
248   correlation was observed for laboratory report assessments in SES. For this module a workshop
249   for the laboratory report was part of the lecture each week. This likely explains both the high
250   attendance (~90%) and the correlation with attendance and assessment performance, displaying
251   that students considered these sessions valuable. Based on the positive moderate relationships
252   on attendance and performance in the Sport and Exercise module the present study data
253   supports the use of attendance monitoring, if the teaching pedagogy is aligned to the assessment
254   task.

255

256   Akin to the findings of SES, similar moderate relationships between attendance and assessment
257   performance were reported in SDMC entailing presentations and essays. The mean attendance
258   was lower by 37% compared to SES however, whilst mean grade in assessment was similar
259   (~2% difference). Nevertheless, considering degree programs of this nature are not dependent
260   on practical or clinical skills (like ST and SES, respectively) attendance may not have been
261   considered as important by the student. Rather, a large component of study is independent and
262   requires no formal attendance to sessions (i.e. independently directed reading). The institution
263   used in this study sets a requirement of around 152 hours independent study combined with
264   around 48 hours face to face teaching (this may vary depending on module). Based on this
265   premise, this may explain why grade average was maintained despite poor attendance in
266   SDMC. Nonetheless, encouraging high attendance is still warranted, as a positive moderate

267 correlation was observed for both presentation and essay performance within the higher

268 attenders.

269

270 The weakest attendance-assessment performance relationship observed was for ST and

271 practical assessments. This is surprising as high attendance to these sessions, in theory, should

272 allow them to gain the practical skills necessary to achieve a better grade in the practical

273 assessment. The lack of a strong correlation may be due to the generally high attendance in this

274 module as all students attended at least 75% of the sessions. A contributory reason for such

275 high attendance may be due to the practical nature of the assessment, therefore students found

276 it important to attend these sessions in order to gain the necessary skills for the assessment.

277 This is in agreement with previous research suggesting students are likely to attended more

278 frequently if they perceive the sessions are central to assessment preparation and passing the

279 course (Murphy, 1998; Browne and Race, 2002; Exley and Dennick, 2004). The high

280 attendance might also explain, in part, why no correlation was observed in this data as there

281 was a lack of variation in attendance rates (range 75 – 100%) compared to the other degree

282 programs (SES = 60 – 100%, ST = 10 – 100%). However, this module did also report

283 significantly greater assessment grades compared to the other degree programs with lower

284 attendance; therefore, suggesting attendance was important to the achievement of higher grades

285 in ST, despite a weak correlation. A benchmark of over 75% attendance therefore is still

286 worthwhile in this case. The added value of attending over this threshold is difficult to

287 determine however, although based on the weak positive correlation it may still have a small

288 impact on practical assessment performance.

289

290 **Institutional attendance threshold and assessment performance**

291 A unique finding of this study was that students who attended more than 75% of sessions

292 produced significantly greater performance compared to the students who attended less than

293 this threshold. This was evident for all modules in the present study and the difference between

294 median scores could distinguish between degree classifications (3 to 2:2 class honours). The

295 present study is not the first to find this theme, however, as Durden and Ellis (1995) suggested

296 consistent and high attendance improves assessment performance, despite allowing for up to

297 20% of sessions to be missed. In the hypothetical case that the present study findings were to

298 be consistent throughout the three-year degree cycle, attendance monitoring may be critical as

299 degree classifications in second and third year of undergraduate study ultimately determine the
300 overall classification. This may be of particular interest to academic institutions to provide the
301 best possible opportunities for assessment performance. These findings also support the use of
302 institutional attendance threshold policies in many UK HE institutions in order to heighten the
303 chances of progression onto the next stage of an academic degree, particularly in the SES.
304 However, raising attendance requirements over this threshold should be considered with
305 caution based upon the weak correlation displayed in ST where all students attended over 75%
306 of sessions; suggesting attendance over this threshold adds only a small effect to assessment
307 performance. Attendance over this threshold should not be discouraged however, as small
308 improvements in assessment would still be considered worthwhile; and the student learning
309 experience is determined by more than just assessment performance.
310
311 Whilst potential support for attendance thresholds were evidenced in this study, a caveat is that
312 this do not offer the cause as to how or why improved attendance increased assessment
313 performance; rather, correlations are offered. It could be argued, for example, due to the causal
314 variable of existing academic ability that the more academically able students have better
315 attendance and therefore performed better in the assessment. Equally, the current study did not
316 compare the assessment performance and attendance relationship in an environment where an
317 attendance threshold was not employed by the institution. Based on this factor, it is unknown
318 if the same findings would have been found if no attendance threshold was set by the institution.
319 These findings therefore suggest that whilst attendance could be an important factor for
320 assessment performance, it is unclear if institutions should employ attendance threshold
321 expectations with their learners.
322

323 **Limitations**
324 A consideration of this study is that only first year student data was analysed and therefore
325 should not lead to interpretation to second and third year students. Equally, attendance to
326 sessions does not always result in improvement in qualities such as students ability, motivation,
327 personality and opportunity to learn, which are also considered key to assessment performance
328 (Deane and Murphy, 2013). Additionally, the present study included different types of sports
329 related degree program, and therefore it cannot be discounted other variables such as age
330 (young vs. mature), income (low and high earning backgrounds) and gender (male and female)
331 could have plausibly affected assessment performance. Indeed, in physiology undergraduates

332 a greater impact of attendance on assessment performance was observed for females compared
333 to males (Cortright et al., 2011). In contrast, no clear relationship between age (mature vs.
334 young) and assessment performance has been observed in previous research (Hoskins et al.,
335 1997; Richardson et al., 1994). Future research could attempt to either evaluate the same sports
336 degree program over a number of academic years with similar cohorts of the same institution,
337 or even compare between different institutions. The results of the present study were not
338 separated for gender, as the SES degree programs considered in this study were male
339 dominated, and would have resulted in considerable unbalancing of the sample group.
340 Nevertheless, further research could consider the impacts of these factors on attendance and
341 assessment in sport related degree programs.
342

343 **Summary**

344 This is the first study to display attendance has an important role for assessment performance
345 in first year undergraduate students across SES degree programs and different assessment
346 types. Overall, the present study observations were akin to previous research in science
347 orientated degree programs (Horton et al., 2012), suggesting attendance has a weak effect on
348 assessment performance. Upon distinguishing between degree program and assessment type
349 however, high attendance is of greater importance for exam assessments displaying a moderate
350 correlation with attendance. Conversely, it seems of less importance for practical assessment
351 performance as weaker relationships were observed compared to the other assessment types in
352 this study; although this may have been due to the generally high attendance within this
353 module. Based on the present study findings, future research should distinguish between
354 different assessment types and avoid holistic approaches to investigating the attendance-
355 assessment relationship. Moreover, the use of attendance thresholds within institutional policy
356 are also supported, as over 75% attendance produced significantly greater assessment
357 performance, although direct comparisons with programs without an attendance threshold
358 requires future research to confirm this notion. Regardless of this outcome, attendance is worth
359 monitoring within an institution as it can aid identification of students who are struggling to
360 cope with learning and provide necessary support (Deane and Murphy, 2013). If the subsequent
361 intervention is appropriate, this could also enhance assessment performance, and potentially
362 improve students motivation and opportunity to learn. Lastly, further research is warranted to
363 see if these findings translate beyond the first year of undergraduate study, whilst other factors
364 such as age, gender and income could also be considered.

365

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Disclosure statement

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Table and Figure Legends

Table 1: Asterisk (*) denotes significantly higher overall performance for Sports Therapy in comparison to Sport and Exercise Sciences and Sport Development and Management and Coaching.

Figure 1: Illustrates the relationship between overall attendance and grade (A) and degree specific performance for Sports Therapy (B), Sport and Exercise Science (C) and Sport Development and Management and Coaching (D).

Figure 2: Illustrates the differences in performance across all degree types in students with low attendance (<75%) and high attendance (≥75%). The high attendance group achieved significantly higher performance (denoted by asterisk symbol [*]) in assessments compared to the low attendance group. Data is presented as median and IQR.