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School Sport and Academic Achievement

JOHN BRADLEY, PhD  FRANCIS KEANE, MEd  SUSAN CRAWFORD, PhD

ABSTRACT

BACKGROUND: Physical Education and School Sport (PESS) is an integral part of the school curriculum in Ireland. Historically the “Healthy Body, Healthy Mind” philosophy has promoted the inclusion of PESS with more cognitive school subjects; research suggests that PESS can promote cognitive function and provide educational benefits. However, there is little research on how the choice of school sport influences academic achievement. This study investigated how participation in school sport influences the Leaving Certificate points score in an Irish secondary school. In particular, the study will investigate how the particular sport chosen by students participating in school sport during their Leaving Certificate years influences their Leaving Certificate results.

METHODS: We recorded the Leaving Certificate scores and sports participation from 402 boys graduating from a secondary school in the Ireland during 2008-2011. Sports participation was assigned 1 of 4 categories: rugby, rowing, soccer, and no sport.

RESULTS: Participation in sports during the Leaving Certificate years conferred a 25.4-point benefit to the final Leaving Certificate score. However, participation in rowing, the only individual sport available in the study, resulted in significantly higher Leaving Certificate scores than rugby, soccer and no sport (p < .05), conferring an additional 73.4-point benefit over the next highest group, rugby.

CONCLUSION: Promoting participation in school sport and providing access to a range of team and individual sports throughout the secondary school years may be a beneficial way to improve students’ Leaving Certificate results.

Keywords: physical fitness and sport; PESS; academic achievement; team sports; individual sports.


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Physical Education and School Sport in Ireland has been the subject of several recent studies and a new syllabus is currently being prepared for the Senior Cycle Curriculum. In Ireland, 76% of adult sport is individual sport, with the most popular sports being aerobics/keep fit, swimming, golf, jogging, and cycling. In contrast, team games occupy the most popular school sports with basketball being the most popular, followed by soccer, rounders, then badminton. However, there is little research quantifying how participating in a particular sport influences academic achievement. This study is a first investigation of the relationship between choice of school sports and educational achievement at 1 school in Ireland.

METHODS

Participants
The Leaving Certificate results (the Irish State School Examination) were analyzed from 402 students (age 17-18 years) graduating from an all-boys secondary school between 2008 and 2011.

Procedure
Most students completed 7 exam subjects with some doing an “extra” subject such as music. On completion of the Leaving Certificate examinations, the 6 best subjects are allocated points on a sliding scale as shown in Table 1. Students can achieve a maximum of 600 points and these points are used to apply for third level courses.

The student’s Leaving Certificate scores were divided into 1 of 4 categories based on their sporting participation. The main sports at the school in the current study were rugby, soccer, and rowing. During the 2 years studying for the Leaving Certificate, these sports were available as extra-curricular activities only, that is, they were not timetabled in the normal curriculum and students participating in these sports would do so in addition to their normal timetabled classes. The sports participation of each school child was assessed according to 4 categories: rugby, rowing, soccer, and no sport.

Children were assigned to a category following discussion with teaching staff at the school, coaching staff of the particular sports, consultation of past school newsletters or other school publications, and verbal contact with the individual student or student peers. Involvement in a particular sport was based on a student being a member of the school squad at any level during the years studying for their Leaving Certificate (ie, in any of the school teams—first team, second team, etc.—if there was more than 1 team).

Data Analysis
The data from all 3 years were analyzed using a one-way ANOVA with 4 levels. Individual group differences were assessed using Bonferroni post hoc analysis. Statistical significance was set at p < .05.

RESULTS
The largest group over the 3 years of the study was the no sport group, followed by rugby, soccer, and rowing (Figure 1). Interestingly, over the 4 years of the study the numbers of students doing no sport averaged approximately 43% but the range was 27.5% (2010) to 55.9% (2008) as Table 2 shows.

The average Leaving Certificate score from the 4-year study was 420.5. When aligned with sports participation, however, rowing was significantly higher than rugby, soccer, and no sport (Figure 2, p < .05), giving a Leaving Certificate points advantage of 73.4 over the next highest category, rugby. The Leaving Certificate scores from rugby, soccer, and no sport were not significantly different to each other. The Leaving Certificate scores from rowing students each year were also consistently higher than from the other categories (Table 2).

Table 1. Irish Leaving Certificate Examination Points

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<tr>
<th>Leaving Certificate Grade</th>
<th>Higher Paper</th>
<th>Lower Paper</th>
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</thead>
<tbody>
<tr>
<td>A1</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>A2</td>
<td>90</td>
<td>50</td>
</tr>
<tr>
<td>B1</td>
<td>85</td>
<td>45</td>
</tr>
<tr>
<td>B2</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>B3</td>
<td>75</td>
<td>35</td>
</tr>
<tr>
<td>C1</td>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td>C2</td>
<td>65</td>
<td>25</td>
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<td>D2</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>D3</td>
<td>45</td>
<td>5</td>
</tr>
</tbody>
</table>
The numbers of students achieving higher than the average Leaving Certificate score (420.5) over the study is shown in Table 3. For students participating in any sport, the average Leaving Certificate score was 431.5 points, compared to 406.1 points from students not participating in sport. From students participating in a sport, 58.3% of them exceeded the school average Leaving Certificate score compared to 47.1% of students not participating in any sport. Participating in a sport during the Leaving Certificate gave an average Leaving Certificate score benefit of 25.4 points.

The school in this study has adopted a strong sports ethos and consistently has done well in local and national competitions. A summary of the sporting success of the 3 sports in this study is shown in Table 4.

**DISCUSSION**

Physical Education and School Sport (PESS) is thought to be beneficial to educational attainment. The average benefit to the Leaving Certificate scores of 25.4 points from participation in sport supports the “Healthy Body, Healthy Mind” philosophy. The nearly 74-point average benefit that rowing confers to the Leaving Certificate score over the next highest category (rugby) is interesting. To our knowledge, there has been little research over choice of sport category (rugby) is interesting. To our knowledge, there has been little research over choice of sport among children or the influence of choice of sport on educational attainment. The majority of research in this area relates to the continued participation in sport on leaving school. Research from England shows that adults with a degree-level qualification are 3 times more likely to participate in sports compared to those with no tertiary qualification, whereas in Ireland, 43% of people who play sport have a third-level qualification compared to 28% of the wider population. The impact of educational attainment on playing sport in Irish adults is consistent across all age groups, so the positive benefit of education on sporting participation lasts a lifetime. The impact of adult education and low income may have some impact on childhood sporting participation, as there is.
an indirect link between not playing sport as an adult
and having parents who also did not play sport.\textsuperscript{14}
Socio-economic status (SES) has been shown to be
related to academic achievement,\textsuperscript{15} and is related to
sports participation in adults\textsuperscript{11} but does not influence
the physical activity of school children—presumably
as PESS is often a timetabled, compulsory class in
the pre-leaving certificate school years. PESS often
becomes an optional extra-curricular activity in the
Leaving Certificate school years in Ireland (age 17-18).
Creating an exercise habit in the earlier school years
may encourage school children to continue with PESS
in their Leaving Certificate school years and allow
them to realize the academic benefits shown in this
study.
Socio-economic status was not assessed in the
present case study. However, the school participating
in the study was 1 of the 56 fee-paying, post-primary
schools in Ireland. Fee-paying schools in Ireland are
classified as high SES with a high correlation to
parental occupation and parental education.\textsuperscript{16} This
may suggest that the range of sporting options avail-
able to students is greater and may influence the
results by making more sports accessible to students
in their Leaving Certificate years. However, this also
provides a greater opportunity to investigate the rela-
tionship between choice of school sport and academic
achievement. Further research is needed to see if a sim-
ilar relationship between choice of sport and academic
achievement exists in other schools in Ireland and
further afield. The range of school sports available is
usually determined by the particular school. As men-
tioned earlier the 3 most common sports in schools
in Ireland are team sports, with the most common
individual sport, badminton, the fourth most popu-
lar school sport. With sport being available mostly
as an extra-curricular option in the Leaving Certifi-
cate years (the situation in this study), participants
will have the option to choose to participate in a
particular sport or not, rather than participating in a
general PESS lesson, when the content is determined
by the PE teacher. Children continuing to participate
in PESS throughout their Leaving Certificate years
perhaps develop a particular personality that may con-
fer benefits in academic achievement. Several studies
have shown that there is a positive association between
sports, extraversion, and conscientiousness.\textsuperscript{17,18} Ath-
letes exhibit higher personality scores for extraversion
and conscientiousness than non-athletes\textsuperscript{19} and partic-
ipation in sport is associated with positive emotions
such as feeling energetic, extraverted, and being effi-
cient, organized and systematic.\textsuperscript{18} These characteris-
tics, while not a prerequisite for sporting participation,
will be reinforced and enhanced by continued par-
ticipation in sport. Encouraging PESS in early school
years may promote these characteristics and encourage
participation in sport throughout the school years and
beyond. This study neglected to include any involve-
ment in extra-school sport (sport separate from the
school environment). Whereas this has the potential
to introduce confounders such as students participating
in new sports, the aim of the study was to investigate
the role of school sport in academic achievement and
the influence of the range of sports offered at a typi-
cal fee-paying school in Ireland. Extending this to a
wider range of schools would widen the range of sports
encountered. Duplicating the school sport in an extra-
school context was thought not significantly to affect
the findings of this study as it would simply reinforce
the influence of participation in sport on academic
achievement.
Studies investigating the personality characteristics
of high achievers in education suggest key indicators
are motivational strategies, self-regulation and self-
efficacy.\textsuperscript{20,21} These characteristics of high achievers are
consistent with the high levels of conscientiousness
and extraversion identified in athletes participating
in different sports. Learners who have high levels
of conscientiousness show greater motivation levels
and are more motivated to learn.\textsuperscript{22} These individuals
are more reliable, self-disciplined, and persevering,
leading to greater motivation and self-efficacy. Also,
conscientious individuals have a greater tendency for
self-deception,\textsuperscript{23} all of which tends to lead to higher
achievement levels. Applying this rationale to the
current study can perhaps account for the average
benefit to the Leaving Certificate score of 25.4 points
from those participating in sport.
The most popular sports at school in Ireland are
team sports.\textsuperscript{6} However, rowing, the only individual
sport available to children in this study produced
significantly greater Leaving Certificate scores than
the team sports and not participating in any sport.
Comparison of personality traits in athletes of
individual and team sports showed that athletes
of individual sports scored significantly higher on
conscientiousness and autonomy and athletes of team
sports scored higher in agreeableness and sociotropy.\textsuperscript{19}
This perhaps suggests a reason why rowing seems to
confederate a further advantage on the Leaving Certificate
scores compared to rugby and soccer. The higher level
of conscientiousness displayed by athletes of individual
sports suggests higher levels of motivation to learn and
a greater tendency to strive for achievement leading to
a greater benefit to academic achievement and Leaving
Certificate results.
The Leaving Certificate cycle is a busy time for Irish
children. Informal discussion with the children in this
study suggested that those who gave up sport in the
Leaving Certificate school years did so in order to
concentrate on their studies. Students who gave up
training for sport often spent less time subsequently
on their studies (unpublished observations). The
conscientious personality trait characteristic of sports
participants in general and displayed in greater levels in participants of individual sports in particular may partly account for this. This study suggests that those students who can maintain involvement in a sport benefit both their sport and their Leaving Certificate scores. By having a strong sporting ethos, a school can enhance its reputation in both the sporting field and the educational field. The sporting achievements of the school in this study (Table 4) suggest considerable sporting success nationally in Ireland. Given the significant improvement in the Leaving Certificate scores from students who participated in rowing, perhaps a greater emphasis on individual sports in schools could create a beneficial environment for higher academic achievement.

Limitations

This study was, to our knowledge, the first study looking into the relationship between choice of school sport and academic achievement. The results and findings are based on sporting participation and Leaving Certificate results from only 1 secondary school in the Republic of Ireland. The findings are consistent over the 4 years of the current study but further research is needed to see if they are consistent in other schools and other areas. The current study is also limited to the sports available at this school. The relatively small number of students involved in rowing may limit the wider application of the results. Further investigation is needed across a range of schools incorporating a range of individual and team sports to support the claims of the current study that the personality characteristics of participants in individual sports can positively influence academic achievement.

Conclusion

Our study suggests that participating in extracurricular school sport whilst studying for Leaving Certificate secondary school-leaver examinations can benefit academic achievement. Furthermore, our results suggest that participating in individual sports confers a further benefit to academic results because of the enhanced positive personality characteristics of conscientiousness and autonomy associated with these sports.

IMPLICATIONS FOR SCHOOL HEALTH

This study illustrates the impact that school sports can have on academic achievement. The benefits of sport and exercise to health are well recognized. However more academic subjects can often take precedence over PESS during the important final years of secondary school. Encouraging participation in school sport can help promote academic achievement as well as providing an opportunity to achieve health-promoting physical activity. School sport programmes that offer a range of individual and team sports can enhance the benefits that both bring to academic achievement and personality development. This study could have significant impact on the choice of sports offered by schools and the emphasis schools place upon PESS.

Human Subjects' Approval Statement

The study was approved by the Social Research Ethics Committee of University College Cork.

REFERENCES


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