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# The effect of peer tutoring on academic achievement

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## Abstract

**Purpose** – The purpose of this paper is to determine the effects of peer tutoring on the academic achievement, during practical assessments, of the tutors and tutees.

**Design/methodology/approach** – Final year students on an undergraduate Sports Science degree programme provided optional peer tutored practical sessions, once per week (two hours per session) for 12 weeks, for second year students on the same undergraduate programme. Students were then assessed on their ability to demonstrate, coach and explain a range of dynamic resistance exercises.

**Findings** – A one way analysis of variance with Bonferroni *post hoc* analysis demonstrated a significantly greater academic achievement in the peer tutoring group ( $73.64 \pm 10.26$  per cent) compared to students that were not peer tutored ( $46.20 \pm 20.27$ ,  $p = 0.003$ ) and compared to the previous years' cohort that were not peer tutored ( $56.83 \pm 19.18$ ,  $p < 0.001$ ). Moreover, tutors also demonstrated significantly ( $p < 0.001$ ) higher grades ( $82.00 \pm 11.01$  per cent) compared to the students that did not act as peer tutors ( $64.88 \pm 8.82$  per cent).

**Practical implications** – This study demonstrates that peer tutoring during practical sessions in Sports Science programmes can enhance the development of practical skills and achievement of both tutees and tutors during practical assessments.

**Originality/value** – To the authors knowledge this is the first study to determine the effects of peer tutoring on both the tutors and tutees, in a Sports Science setting.

**Keywords** Mentoring, Employability, Achievement, Practical skills

**Paper type** Research paper

## Introduction

The benefits of peer tutoring have been investigated in a range of subject areas, including computer literacy (Park *et al.*, 2008), languages (Maynard and Almarzouqi, 2006), economics (Topping *et al.*, 1997), medicine (Sobral, 2002), mathematics (Houston and Lazenbatt, 1999), physical education (Johnson and Ward, 2001; Sandford *et al.*, 2010) and applied sports science (Comfort, 2011). Furthermore, Quinn *et al.* (2002) found that mentorship also enhanced the achievement and retention of first year science students that were at risk of failing.

Learning experience and academic achievement, across a range of modes of assessment, is enhanced via peer tutoring, and benefits both the tutees (Topping, 1996; Topping *et al.*, 1997; Houston and Lazenbatt, 1999; Johnson and Ward, 2001; Maynard and Almarzouqi, 2006; Comfort, 2011), and the tutors (Topping, 1996; Houston and Lazenbatt, 1999; Saunders, 2002; Sobral, 2002; Maynard and Almarzouqi, 2006). Furthermore, Buzbee-Little (2005) found that peer coaching in a collaborative learning environment facilitated learning and the sharing of unique and new ideas from different perspectives. In a review of literature, Ward *et al.* (1998) concluded that peer tutoring is an effective instructional strategy especially for students learning and



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developing new skills. A further review by Ward and Lee (2005) concluded that peer assisted learning is especially effective in the development of new skills, with peer tutoring in physical education commonly demonstrating enhanced learning and achievement. More recently, Comfort (2011) also demonstrated that peer tutoring enhanced academic achievement and practical skills of tutees, studying Applied Sports Science.

Peer tutoring has been shown to result in improved transferable skills and better degree assessment outcomes (Topping *et al.*, 1997; Houston and Lazenbatt, 1999). More specifically Johnson and Ward (2001) found that physical education students achieved greater success in practical activities and new skill development when feedback and tutoring was provided by their peers, with similar findings in applied sports science undergraduates (Comfort, 2011). Most peer tutoring studies have found higher levels of achievement in tutors and tutees (Topping, 1996; Houston and Lazenbatt, 1999; Sobral, 2002; Saunders, 2002; Maynard and Almarzouqi, 2006). Sobral (2002) also noted that peer tutors with a higher academic achievement are preferentially selected as tutors, which may enhance the tutoring that they provide. Moreover, a high level of competency of the tutors is essential in the development of new skills and competencies in a practical environment, as D'Arripe-Longueville *et al.* (2002) found that higher skill levels in physical education tutors resulted in tutees setting themselves higher goals and increasing levels of participation in practical activities, with a resultant increase in achievement by tutees. It appears, therefore, that to enhance the potential benefits of peer tutoring, it is essential that both tutors and tutees receive some training regarding their individual roles, and what their expectations should be; which reduces role conflict and empowers the tutors. It is also essential that the tutors are trained on developing a knowledge building approach, rather than a didactic knowledge telling approach, to ensure that both tutor and tutees benefit from the process (Roscoe and Chi, 2007).

Pedagogical advantages of peer tutoring include a more active and interactive participative learning process and immediate feedback, along with lower levels of anxiety in the tutees (Topping, 1996). The increased achievement of tutors may be explained by Roscoe and Chi (2007) who conclude that tutors are more likely to experience improved achievement when the implemented tutoring task is similar to their assessment requirements. They go on to explain that when tutors conceptualise concepts and discuss them with the tutees that this aids deeper understanding and learning in the tutors. In addition, Topping (1996) suggests that merely preparing to tutor others enhances cognitive processes by increasing attention and motivation of the tutors.

Peer tutoring has been shown to be highly effective in enhancing both tutor and tutee achievements and skill development (Topping, 1996; Topping *et al.*, 1997; Houston and Lazenbatt, 1999; Johnson and Ward, 2001; Saunders, 2002; Sobral, 2002; Maynard and Almarzouqi, 2006), especially in physical education (Ward and Lee, 2005) and coaching (D'Arripe-Longueville *et al.*, 2002). The development of the highly skill based physical competencies and the ability to coach complex activities proficiently requires many hours of study, practice and refinement, supported by effective formative feedback. A large percentage of this study, however, is usually independent of structured feedback and can lead to unsatisfactory progress. In light of the fact that both sports science and strength and conditioning are professions that are still in their infancy and developing at a steady rate it is important to identify the most effective methods of teaching and learning, especially in an area where skill development is highly important. The only literature available regarding undergraduate sports science students demonstrated significantly higher grades ( $p < 0.05$ ) for tutees in a practical assessment involving the coaching of complex exercises compared to students that

were not tutored (Comfort, 2011). This study, however, did not report on the effect of peer tutoring on the tutors' performances. This investigation, therefore, aimed to identify if peer tutoring enhances achievement of both the tutors and tutees. Based on the findings of previous research in other subject areas (Topping, 1996; Houston and Lazenbatt, 1999; Sobral, 2002; Saunders, 2002; Maynard and Almarzouqi, 2006) it was hypothesised that peer tutoring within a sports science setting would enhance the achievement of both tutors and tutees.

### *Aim*

To determine if peer tutoring enhances academic achievement of tutors and tutees studying an undergraduate sports science degree.

### **Method**

Undergraduate third year sports science students acted as peer tutors for second year sports science students during optional two-hour long practical sessions, once per week, for a period of 12 weeks, in addition to "normal" timetabled practical sessions led by the lecturer.

All tutored sessions were structured to re-enforce the learning outcomes of the previous timetabled session (with the lecturer). The peer tutored sessions focused on developing the students' individual ability to both perform and coach a range of strength and power-based exercises, including the Olympic lifts (Clean and Jerk, and Snatch), in preparation for the practical assessment. Due to the fact that Maynard and Almarzouqi (2006) highlighted that peer tutors cannot always offer appropriate assistance and therefore require additional support themselves a qualified strength and conditioning coach was also present to assist the tutors. In addition tutors were briefed on their roles, prior to commencement of the project, to improve the perceived success of the tutors' roles and reduce role conflict (Leung and Bush, 2003). For the first six weeks the tutors' primary role was to help the tutees to develop and refine their own practical skills in performing the range of activities, and understanding the applied theoretical concepts of the use of such exercises. These exercises included free-weight strength and power exercises including the Olympic lifts. For the final six weeks, once the tutees were competent at performing all exercises, the emphasis moved to ensuring that the tutees were competent and confident at coaching each other through the range of activities and exercises, while providing constructive feedback and correction where required, along with the explanation of the application of the exercises. Tutors were asked to adopt a knowledge building approach, rather than a didactic knowledge telling approach, to ensure that both tutor and tutees benefitted from the process (Roscoe and Chi, 2007). Normal timetabled practical sessions for all students were structured in a similar way, with the first six weeks focusing on the development of competence in the performance of these exercises, followed by the second block of six weeks focusing on their ability to coach and explain the application of the exercises.

The peer tutoring sessions were not compulsory resulting in two groups of tutees (second years) and two groups of tutors (third years) for comparison of achievement at the end of the study, in line with the previous study by Comfort (2011). The grades of second year tutees (Group 1;  $n = 28$ ) was compared to the students in that did not attend the peer tutoring sessions (Group 2;  $n = 41$ ), and also compared to the grades of students from the previous year (non-peer tutored) (Group 3;  $n = 24$ ). There were no significant differences in prior academic achievements (Group 1,  $58.95 \pm 9.63$ ; Group 2,  $57.54 \pm 11.20$ ; Group 3,  $58.21 \pm 9.05$ ;  $p > 0.05$ ) of these three groups of students, prior to the commencement of this

module. Similarly, grades of third year tutors (Group 4;  $n = 14$ ) were compared to the third year students that did not act as tutors (Group 5;  $n = 17$ ); again there were no significant differences in previous grades achieved between these two groups (Group 4,  $62.50 \pm 11.34$ ; Group 5,  $63.43 \pm 9.39$ ;  $p > 0.05$ ). Students that were peer tutored attended a minimum of eight of the 12 peer tutoring sessions. Peer tutors attended all tutoring sessions.

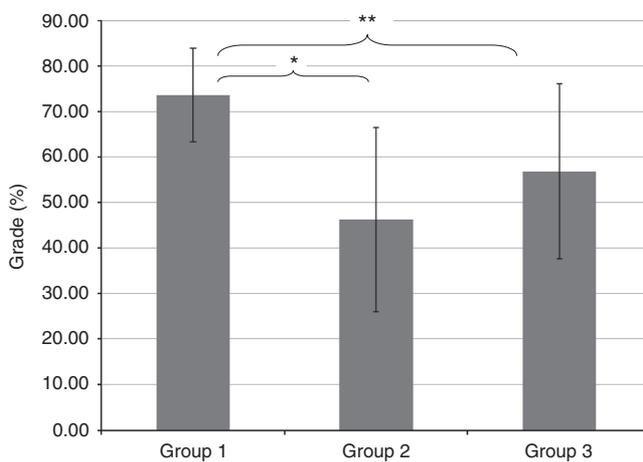
Prior to the commencement of the peer tutoring programme both tutees and tutors were briefed on their own, and each other's roles, responsibilities and expectations clarified to facilitate the programme and help to prevent any hierarchical struggle (Colvin, 2007). At the end of the semester both second and third year students completed a practical assessment, lasting 30 minutes, to determine their ability to demonstrate, coach and explain complex conditioning exercises, including the Olympic lifts, with the two assessors blinded as to who attended the peer tutoring sessions. Students were assessed to determine their competence at coaching and performing a range of exercises, and then graded on their level of understanding of the underpinning physiological and biomechanical theories relating to the application of such modes of exercise.

### Statistical analysis

The grades of the tutees (Groups 1, 2 and 3) were compared via a one way analysis of variance with Bonferroni *post hoc* analysis, while the grades of the third years were compared using an independent *t*-test, after testing for normal distribution within each group. All statistical analysis was conducted using SPSS (Version 17). A priori level of significance was set at  $p \leq 0.05$ .

### Results

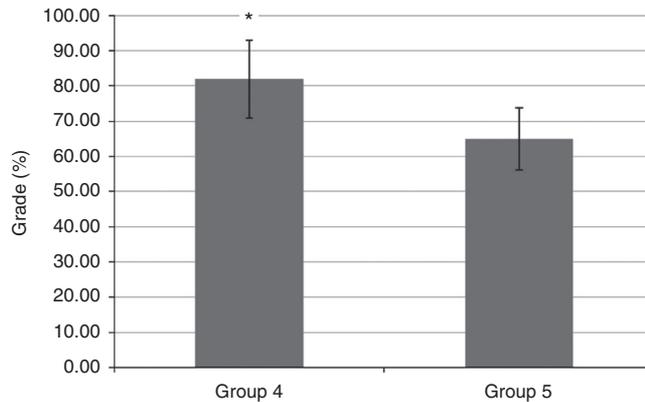
Homogeneity of variance ( $p = 0.351$ ) revealed that the groups were normally distributed. Analysis of variance demonstrated a significant difference ( $p < 0.001$ ) between groups while *post hoc* analysis revealed that peer tutoring (Group 1) resulted in significantly higher grades ( $73.64 \pm 10.26$  per cent) compared to those that were not peer tutored; Group 2 ( $46.20 \pm 20.27$ ;  $p < 0.001$ ) and Group 3 ( $56.83 \pm 19.18$ ;  $p = 0.003$ ) (Figure 1). No significant difference ( $p = 0.062$ ) was found between Group 2 and Group 3 (Figure 2).



Notes: \* $p < 0.001$  \*\* $p = 0.003$

**Figure 1.**  
Comparison of grades  
between second year  
students

**Figure 2.**  
Comparison of grades  
between third  
year students



Note: \* $p < 0.001$

Student tutors demonstrated significantly ( $p < 0.001$ ) higher grades (Group 4;  $82.00 \pm 11.01$  per cent) compared to the students that did not act as peer tutors (Group 5;  $64.88 \pm 8.82$  per cent).

### Discussion

Results demonstrated that peer tutoring is a beneficial method of enhancing student achievement as significantly higher grades were achieved by the students that were peer tutored (Group 1:  $73.64 \pm 10.26$  per cent) compared to students from the same cohort that were not peer tutored (Group 2:  $46.20 \pm 20.27$ ,  $p < 0.001$ ) and compared to students from a previous year that were not peer tutored (Group 3:  $59.83 \pm 19.18$ ,  $p = 0.003$ ).

These results are in line with previous research that has also demonstrated that peer tutoring results in improved transferable skills and higher grades for tutees (Topping *et al.*, 1997; Houston and Lazenbatt, 1999; Sobral, 2002; Saunders, 2002; Maynard and Almarzouqi, 2006). Johnson and Ward (2001) also found comparable results in physical education students who achieved greater success in practical activities and new skill development when feedback and tutoring was provided by their peers. Moreover, these findings are similar to the previous findings of Comfort (2011) who found significantly ( $p < 0.05$ ) higher levels of achievement in students that were peer tutored ( $75.00 \pm 10.58$  per cent), compared to students' that were not peer tutored ( $51.81 \pm 18.49$  per cent) and in comparison to a cohort of students from previous years ( $59.48 \pm 19.21$  per cent). It is likely that some of this is attributable to the immediate feedback, along with lower levels of anxiety in the tutees when peer tutors rather than the academic tutor is present (Topping, 1996).

The findings of this study highlight how effectively peer tutoring can also enhance the academic achievement of the tutors, as the tutors demonstrated significantly ( $p < 0.001$ ) higher grades ( $82.00 \pm 11.01$  per cent) compared to the students that did not act as peer tutors ( $64.88 \pm 8.82$  per cent). These findings are in line with previous research which has demonstrated that both learning experience and academic achievement is enhanced via tutoring peers (Topping, 1996; Houston and Lazenbatt, 1999; Saunders, 2002; Sobral, 2002; Maynard and Almarzouqi, 2006), especially within a physical education (Ward and Lee, 2005)

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and coaching environment (D'Arripe-Longueville *et al.*, 2002). This may be partly explained by the findings of Sobral (2002) who noted that peer tutors with a higher academic achievement are preferentially selected as tutors, and in this case may have preferentially self-selected themselves, although there were no significant differences in the average grades achieved by the two groups of students. Additionally, as the tasks for the tutors, during each session, closely matched the requirements of their assessment it is not surprising that their assessment reflected a higher level of achievement, which is in line with the previous suggestions (Roscoe and Chi, 2007). It is important to note, however, that even the "normal" timetabled sessions for these students were structured in a similar way to the peer tutoring sessions; in fact the peer tutoring sessions were used to re-enforce the "normal" taught sessions.

These findings have significant implications in terms of the development of practical skills and competencies that assist in the employability of students, especially within applied and practical areas of employment such as sports science and strength and conditioning. Many of the practical competencies in these areas are highly skill based and require the development of not only individual physical skill development, but also the ability to coach complex activities; proficiency in these areas takes many hours of study, practice and refinement. A large percentage of study during undergraduate programmes is usually independent and self-directed, and this can be independent of structured feedback and can lead to unsatisfactory progress, however, the results of this study demonstrate that peer tutors may effectively address this and enhance the achievement of the tutees during practical assessments. Furthermore, in light of the move by many higher education institutions to develop blended learning and online modes of delivery it is essential to consider the possible implications that a lack of regular tutor and peer feedback may have on student achievement and development of highly practical programmes of study, with research by Barczyk *et al.* (2011) demonstrating that mentoring in distance education can be effective. It is suggested that such methods of delivery include online review of practical and coaching skills by both the tutors and peers, to ensure adequate skill development and academic achievement. Further research determining if such peer review methods enhance achievement during online and blended learning delivery is recommended.

### Conclusion

It is recommended that peer tutoring is implemented during practical sessions, especially those relating to the instruction of exercise, on undergraduate sports science programmes as it has been shown to enhance the achievement of both the tutors and tutees during practical assessments; furthermore, enhanced practical skills are likely to improve employability of graduates from such areas of study. This approach enhances student achievement and skill development, and may be a more financially efficient method of delivering highly practical modules to large groups of students.

### References

- Barczyk, C., Buckenmeyer, J., Feldman, L. and Hixon, E. (2011), "Assessment of a university-based distance education mentoring program from a quality management perspective", *Mentoring and Tutoring: Partnership in Learning*, Vol. 19 No. 1, pp. 5-24.

- 
- Buzbee-Little, P.F. (2005), "Peer coaching as a support to collaborative teaching", *Mentoring and Tutoring: Partnership in Learning*, Vol. 13 No. 1, pp. 83-94.
- Colvin, J.W. (2007), "Peer tutoring and social dynamics in higher education", *Mentoring and Tutoring: Partnership in Learning*, Vol. 15 No. 2, pp. 165-181.
- Comfort, P. (2011), "The effect of peer tutoring on academic achievement during practical assessments in applied sports science students", *Innovations in Education and Teaching International*, Vol. 48 No. 2, pp. 207-211.
- D'Arripe-Longueville, F., Gernigon, C., Huet, M., Cadopi, M. and Winnykamen, F. (2002), "Peer tutoring in a physical education setting: influence of tutor skill level on novice learners motivation and performance", *Journal of Teaching in Physical Education*, Vol. 22 No. 1, pp. 105-123.
- Houston, S.K. and Lazenbatt, A. (1999), "Peer tutoring in a modelling course", *Innovations in Education and Teaching International*, Vol. 36 No. 1, pp. 71-79.
- Johnson, M. and Ward, P. (2001), "Effects of classwide peer tutoring on correct performance of striking skills in 3rd grade physical education", *Journal of Teaching in Physical Education*, Vol. 20 No. 3, pp. 247-263.
- Leung, M.L. and Bush, T. (2003), "Student mentoring in higher education: Hong Kong Baptist University", *Mentoring and Tutoring: Partnership in Learning*, Vol. 11 No. 3, pp. 263-271.
- Maynard, J. and Almarzouqi, I. (2006), "Investigating peer tutoring", *ELT Journal*, Vol. 60 No. 1, pp. 13-22.
- Park, S., Sim, H. and Roh, H. (2008), "A study of the strategies of peer tutoring in computer literacy education", *British Journal of Educational Technology*, Vol. 39 No. 5, pp. 933-934.
- Quinn, F., Muldoon, R. and Hollingworth, A. (2002), "Formal academic mentoring: a pilot scheme for first-year science students at a regional university", *Mentoring and Tutoring: Partnership in Learning*, Vol. 10 No. 1, pp. 21-33.
- Roscoe, R.D. and Chi, M.T.H. (2007), "Understanding tutor learning: knowledge-building and knowledge telling in peer tutors' explanations and questions", *Review of Education Research*, Vol. 77 No. 4, pp. 534-578.
- Sandford, R.A., Armour, K.M. and Stanton, D.J. (2010), "Volunteer mentors as informal educators in a youth physical activity program", *Mentoring and Tutoring: Partnership in Learning*, Vol. 18 No. 2, pp. 135-153.
- Saunders, D. (2002), "Peer tutoring in higher education", *Studies in Higher Education*, Vol. 17 No. 2, pp. 211-218.
- Sobral, D.T. (2002), "Cross-year peer tutoring experience in medical school: conditions and outcomes for student tutors", *Medical Education*, Vol. 36 No. 11, pp. 1064-1070.
- Topping, K.J. (1996), "The effectiveness of peer tutoring in further and higher education: a typology and review of the literature", *Higher Education*, Vol. 32 No. 3, pp. 321-345.
- Topping, K., Hill, S., McKaig, A., Rogers, C., Rushi, N. and Young, D. (1997), "Paired reciprocal peer tutoring in undergraduate economics", *Innovations in Education and Teaching International*, Vol. 34 No. 2, pp. 96-113.
- Ward, P. and Lee, M. (2005), "Peer-assisted learning in physical education: a review of theory and research", *Journal of Teaching in Physical Education*, Vol. 24 No. 3, pp. 205-225.
- Ward, P., Smith, S.L., Makasci, K. and Crouch, D. (1998), "Differential effects of peer mediated accountability in elementary physical education", *Journal of Teaching in Physical Education*, Vol. 17 No. 4, pp. 442-452.

**Further reading**

Legrain, P., D'Arripe-Longueville, F. and Gernigon, C. (2003), "The influence of trained peer tutoring on tutors' motivation and performance in a French boxing setting", *Journal of Sports Sciences*, Vol. 21 No. 7, pp. 539-550.

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