A Proposal for Facilitating More Cooperation in Competitive Sports

George M JACOBS – george.jacobs@gmail.com

TEH Jiexin

Leonora SPENCER

James Cook University Singapore

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Abstract

This article utilises theories, methods and tools from the fields of Social Psychology and Education to suggest new metrics for the analysis of competitive sport. The hope is that these metrics will encourage cooperation to exist alongside of the dominant feelings of competition. The main theory from Social Psychology involved here is Social Interdependence Theory, which offers insights into what leads people to want to promote the success of others, i.e., to feel positively interdependent. The main method from Education is cooperative learning, which implements insights from Social Interdependence Theory to encourage students to feel positively interdependent towards classmates and others. The main tool from Education is ipsative assessment, which compares people's performance, not with that of others or with a standard, but with their own previous performance. Examples are provided from both sport and classroom learning.

Introduction

An area of ongoing debate in sports and other areas of human endeavour involves the relative merits of cooperation and competition (Debate.org, 2017). The cooperative learning literature from the fields of Education and Social Psychology often links cooperation with feelings of positive interdependence, i.e., believing that one's outcomes are positively correlated with those of others, and links competition with feelings of negative interdependence, i.e., believing that one's outcomes are negatively correlated with those of others (Johnson & Johnson, 2013). When people feel positively interdependent, they are likely to help one another. In contrast, when people feel negatively interdependent, they may be less likely to help one another and may even try to hinder each other's goal attainment.

Here are sports examples, one each of positive interdependence and negative interdependence. As to cooperation and positive interdependence, two people, #1 and #2, playing as doubles partners in table tennis are likely to feel positively interdependent with each other, because the better #1 plays, the more likely #1 and #2 are to win the match. However, if #2 suffers an injury, it harms #2's and #1's chances of winning. In contrast, an example of competition and negative interdependence might occur should #1 and #2 play singles in table tennis on opposite sides of the same table. In that case, the situation is more likely to produce feelings of negative interdependence, because the better #1 plays, the more likely #2 is to lose the match. Also, if something befalls #2, such as an injury, it harms #2's chances while aiding #1, i.e., #1 swims while #2 sinks.

However, as with most concepts involving human relationships, cooperation and competition can be complicated. To see an example of these complications, let us re-examine the situation of the two table tennis players playing singles on opposite sides of the net. If #1 improves as to skill level, yes, #2's chances of winning decline; yet, #2 now has a challenge to improve in order to keep up with #1. Challenge can make sport more exciting and fulfilling. Similarly, if #2 suffers an ankle injury, yes, #1's chances of winning increase; yet, #1's enjoyment may decrease, as there is less challenge in playing a diminished "opponent". In fact, many other factors come into play that offer reasons why seeming opponents might feel positively interdependent in situations that otherwise appear likely to generate only feelings of negative interdependence.

The Proposal

The following brief proposal introduces two more ways to encourage sports competitors to add feelings of cooperation and positive interdependence to the usually predominant feelings of competition and negative interdependence among participants in the same event. The goal of this proposal is not to eliminate feelings of competition; this proposal is not about cooperative games (Orlick, 2006), although those merit consideration also. The goal of the current proposal is to grow the space for cooperation in competitive sports, with the hope that, as a result, competitors will perform better, enjoy sport more and develop attitudes and skills which will make future cooperation more likely in sport and other areas of life. Two concepts are used to promote cooperation and positive interdependence among competitors: outside challenge positive interdependence (Johnson, Johnson, & Holubec, 2013) and ipsative assessment (Hughes, 2014).

Outside Challenge Positive Interdependence

Many means have been proposed for promoting positive interdependence, such as giving people different resources and/or different roles. Another way to promote positive interdependence is known as ‘outside challenge positive interdependence’, i.e., the idea that competition need not be against people; instead, people can compete against a standard or a problem. A classroom example of outside challenge positive interdependence would be in a mathematics class that regularly uses group activities. Perhaps, the previous year, the teacher’s class had a class average score on maths quizzes of 78 marks out of 100. This year’s class can work together to do better on their quizzes in order to go beyond the standard set by the previous year. Thus, students not only try to do well individually on their quizzes, they also try to boost the learning and, thus, the scores of their groupmates and of all their classmates, so as to achieve their class goal of obtaining an average quiz score above 78. In other words, the class members cooperate to compete against the 78 point average of last year’s class. However, each student’s score in the grade book is their own quiz score.

How might we apply this concept of cooperation among people as those people compete against standards, not people, to types of athletic events? Here is how this might work for some timed events. Let’s take the men’s 100 metre butterfly swim finals at the 2016 Olympics, won by Joseph Schooling of Singapore (Olympic Games, 2017). The eight people who competed in the finals had an average time of 51.28 seconds (please see Table 1). At the same race at the 2012 Olympics, the average time for the eight athletes was 51.68 seconds.

Thus, the 2016 racers beat the 2012 standard, and instead of only the gold, silver and bronze medallists being recognised, perhaps all eight 2016 finalists should have received recognition, not instead of Joseph Schooling, Laszlo Cseh, Chad Le Clos and Michael Phelps (there was a three-way tie for second place), but in addition to them, for being part of the winning group of eight.

Table 1 – Norm referenced comparison of times in the 2012 and 2016 Olympics Men’s 100 metre butterfly finals events.

Name	2012 Finals	Name	2016 Finals
Michael Phelps	51.21	Joseph Schooling	50.39

Chad le Clos	51.44	Laszlo Cseh	51.14
Evgeny Korotyshkin	51.44	Chad Le Clos	51.14
Milorad Cavic	51.81	Michael Phelps	51.14
Steffen Deibler	51.81	Zhuhao Li	51.26
Joeri Verlinden	51.82	Mehdy Metella	51.58
Tyler McGill	51.88	Tom Shields	51.73
Konrad Czerniak	52. 05	Aleksandr Sadovnikov	51.84
Mean Time	**51.68**	**Mean Time**	**51.28**

Ipsative Assessment

Ipsative assessment (Hughes, 2014) offers another route towards promoting cooperation in sport and other areas of human endeavour. In ipsative assessment, people are compared not with others (norm referenced assessment) or with set criteria (criterion referenced assessment) (Glaser, 1965), but with themselves. Thus, ipsative assessment involves intrapersonal comparison, and normative assessment involves interpersonal comparison, while criterion referenced assessment involves people being compared with a standard.

In our racing example above, one way to apply ipsative assessment would be for each swimmer's time in the finals to be compared with their own personal best time in that event. Other metrics for ipsative comparison exist, such as comparing an athlete's time in the finals of an event with their time in the semi-finals of the same event. Each person who exceeded whatever personal standard had been chosen helps the overall group of athletes / participants, such as the finalists in the 2016 Olympic men's 100 metre butterfly, achieve a goal. If an overall negative differential was achieved, i.e., their times in the finals improved over their semi-finals times, the group as a whole would earn recognition and be considered winners, at least in that ipsative sphere.

Tables 2 and 3 show two different computational procedures for doing this ipsative comparison, with each procedure obtaining the same result. (Note: a negative differential denotes improvement, as their times decreased.) Table 2 shows a procedure in which first, the competitors' collective mean times in the semi-final and, then, the final were calculated, and finally, the difference between the two means was determined: $I = \frac{1}{n}\sum_{i=1}^{n} F_i - \frac{1}{n}\sum_{i=1}^{n} SF_i$; where F_i = final time and SF_i = semi-final time. Table 3 shows a second procedure for ipsative assessment, with, of course, the exact same result. In this second procedure, first, the differential between each athlete's semi-final and final times was calculated and then the mean of these differentials was determined: $I = \frac{1}{n}\sum_{i=1}^{n}(F_i - SF_i)$; where F_i = final time and SF_i = semi-final time.

Table 2 – Ipsative comparison of times of each participant in the 2016 Olympic men's 100 metre butterfly using their mean times in the semi-finals and finals.

Name	**2016 SemiFinal Times of the Finalists**	**2016 Finals**	**Difference Between Means**
Joseph Schooling	50.83	50.39	
Laszlo Cseh	51.57	51.14	
Chad Le Clos	51.43	51.14	
Michael Phelps	51.58	51.14	
Zhuhao Li	51.51	51.26	
Mehdy Metella	51.73	51.58	
Tom Shields	51.61	51.73	
Aleksandr Sadovnikov	51.71	51.84	
Group Mean	51.50	51.28	
			-0.22

Table 3 – Ipsative comparison of the mean differential in the times in the semi-finals and finals of each of the participants in the 2016 Olympic men's 100 metre butterfly.

Name	**2016 Semi-Finals**	**2016 Finals**	**Differential**
Joseph Schooling	50.83	50.39	-0.44
Laszlo Cseh	51.57	51.14	-0.43

Chad Le Clos	51.43	51.14	-0.29
Michael Phelps	51.58	51.14	-0.44
Zhuhao Li	51.51	51.26	-0.25
Mehdy Metella	51.73	51.58	-0.15
Tom Shields	51.61	51.73	+0.12
Aleksandr Sadovnikov	51.71	51.84	+0.13
Mean of the Differentials			-0.22

Ipsative scoring is also used in one widespread teaching method, Student Teams Achievement Divisions (STAD) (Slavin, 1995). STAD consists of four steps:

1. The teacher explains the content, such as how to use multiplication to do mathematics word problems.
2. Students study similar problems in groups of four which are heterogeneous as to past achievement in mathematics.
3. Students work alone to take a quiz.
4. Students earn points for their group based on their quiz scores relative to their previous average, i.e., their base score, on mathematics quizzes. This is the ipsative part of the method, and one system for apportioning points is shown in Table 4 (although teachers and students can decide to adjust this).

Table 4 – One system for calculating the points students earn for their team in STAD

Score on Current Quiz Relative to Base Score	**Points Earned for the Team**
More than 10 points below base score	5
10 points below to 1 point below base score	10
Base score to 10 points above base score	20
More than 10 points above base score	30
Perfect paper	30

Table 5 provides an example of how to combine individual points to form a team score in STAD. Please note that all students, even very low achievers, have an equal opportunity to contribute points to their team. Thus, teams are not “penalised” by having low achievers assigned to their team. At the same time, students’ individual grades on the quiz are the grades that go in the grade book for them. Thus, in the fictional example in Table 5, even though Marcus scored more points than Aishah for the team, Aishah’s grade in the gradebook will be higher.

Table 5 – An example of the points students in a group of four earn for their team in STAD

Student	Past Average	Score on Current Quiz	Points Earned for Their Group on Current Quiz
Esperanza	97	100	30
Aishah	85	80	10
Bruce	75	75	20
Marcus	55	62	30

Implications and Conclusion

Outside challenge positive interdependence (competition against a standard rather than against people) and ipsative assessment (competition with oneself rather than with others) offer two strategies which can co-exist with typical forms of competition and thus, strengthen the cooperative element in events that seem to highlight zero sum game competition against other people. These two strategies can be applied in many different sports and with many ages of athletes, from pre-schoolers to centenarians. At least two advantages might arise from the implementation of these strategies. A minor advantage is that new statistical metrics would become available for our stats mad world. Recent years have seen a large increase in the number of statistical analyses applied to a wide range of sports, as the field of sports analytics has grown (Passfield & Hopker, 2016). These statistics arouse the interest not only of athletes, coaches and others in sport, but also of fans. As part of this first advantage, calculating sports statistics offers a means of engaging sports minded students in mathematics (Williams & Williams, 2016).

A more important advantage of adding cooperation to competitive contexts would be to promote a greater feeling of positive interdependence among the athletes, coaches and other stakeholders. Athletes would have a reason to advise each other, to cheer for each other and to celebrate each other's accomplishments. For example, in the case of Michael Phelps, a silver medallist in the 2016 Olympic men's 100 metre butterfly, rather than only remembering Joseph Schooling as the person who deprived him of a 24th gold medal, he could also remember Schooling as one of the seven swimmers who helped him beat the time from the 2012 100m men's butterfly (in which Phelps had won gold). Furthermore, the positive interdependence generated in athletic endeavours might spread to other areas of athletes', other stakeholders' and fans' lives.

Indeed, outside challenge positive interdependence and ipsative assessment have implications for many areas of life. For instance, outside challenges exist everywhere, from the international sphere in which humans confront the overlapping challenges of climate change and poverty, to a group of three students collaborating to meet the challenge of how to cheer up a friend who has been hospitalised. Ipsative assessment has important applications to the concepts of lifelong learning and self-regulated learning, as people seek to strive for better lives for themselves and others in knowledge based societies (Hughes, Wood, & Kitagawa, 2014).

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