



How is participation in sports related to students' performance and well-being?

PISA

PISA in Focus #86



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- Across OECD countries, 52% of students reported that they engage in vigorous physical activities (activities that make them sweat and breathe hard and fast) at least three days a week; and boys engage in such activities one day more per week than girls, on average.
- The amount of vigorous physical activity a student engages in is positively related to the student's well-being.
- Students who engage in moderate physical activity at least one day per week tend to perform better in PISA than students who do not do any physical activity. However, students who engage in vigorous physical activity every single day score lower in science than students who exercise between one and six days per week.

Sports play a vital role in students' life. Playing sports on a regular basis can reduce the risks of obesity, anxiety disorders, low self-esteem and bullying among adolescents, and it can help them live a more active and healthy life as adults. But physical education classes and extracurricular sports activities compete for time with many other important pursuits, including homework and study. Educators and parents may ask whether their children spend enough time (or perhaps too much time) in physical activities, and to what degree participation in sports is associated with students' academic performance and well-being.

Most students practice sports regularly.

In 2015, PISA collected data on 15-year-old students' engagement in vigorous physical activity (activity that makes students sweat and breathe hard for at least 20 minutes per day such as jogging, playing tennis or football). These data show that most students practice sports regularly. On average across OECD countries, 52% of students engage in activities that make them sweat or breathe hard and fast for more than 20 minutes 3 or more days per week. More than 60% of students in Denmark, Iceland, Norway, Poland, Sweden and the United States participate in this kind of activity at least 3 times a week. In contrast, less than 40% of students in Brazil, Colombia, Costa Rica, France, Hong Kong (China), Korea, Macao (China), Singapore, Tunisia, Turkey and the United Arab Emirates do so.

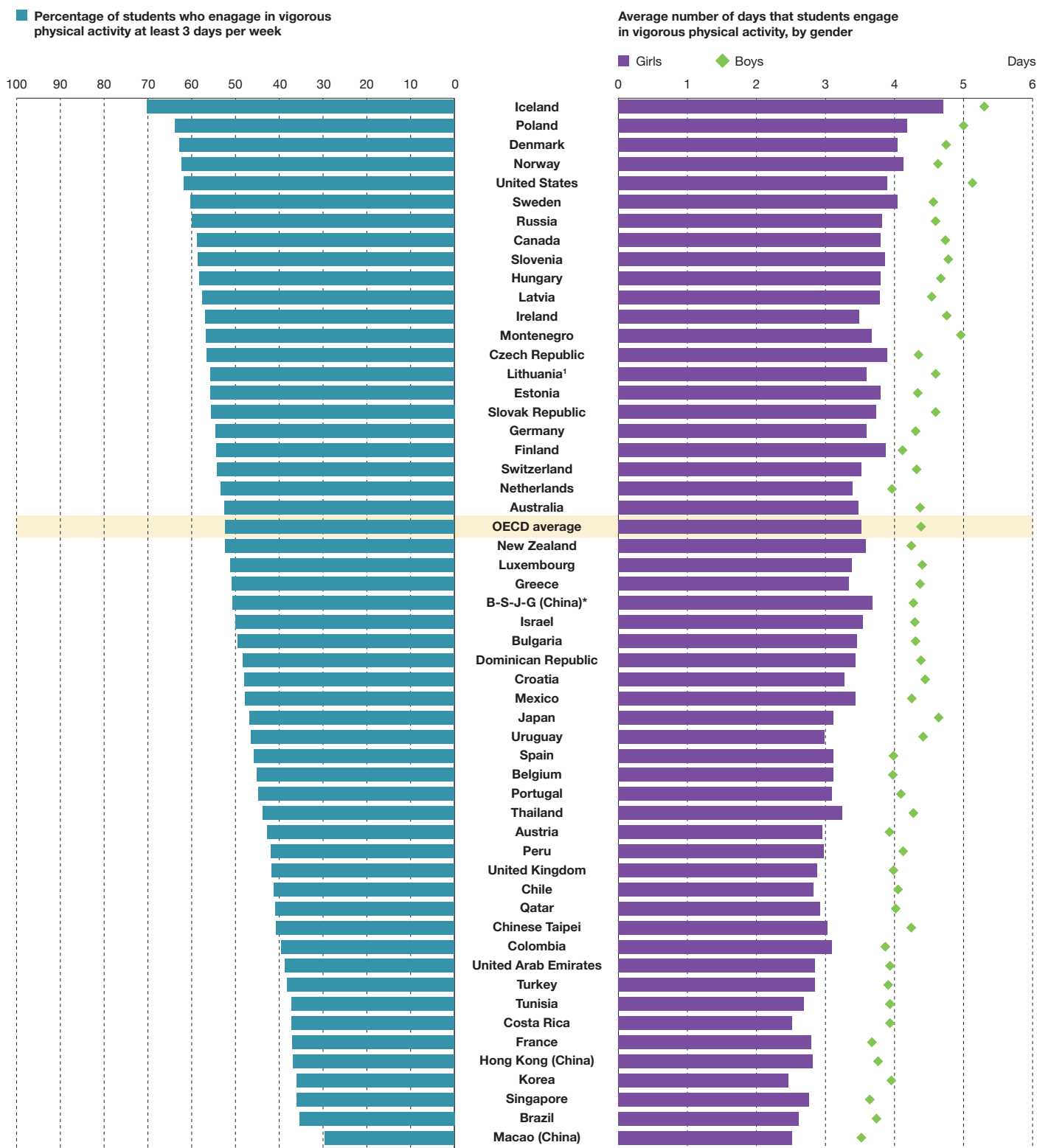
In most PISA-participating countries and economies, boys tend to participate in vigorous physical activity more than girls. Boys reported engaging in vigorous physical activity 4.4 days per week, on average – compared to only 3.5 days per week reported by girls. Gender differences are smallest in Northern and Eastern European countries, while they tend to be large in Japan, Korea and in Latin American countries.

Regular physical activity is linked to greater well-being among students.

There is a clear positive association between physical activity and students' well-being outcomes. According to PISA, students who participate in moderate physical activity (activity that raises students' heart rate and causes them to sweat for at least 60 minutes per day, such as walking, climbing stairs, riding a bike to school) tend to have better psychosocial well-being outcomes than students who do not participate in sports at all. For example, students who engage in moderate physical activity more often during a week are more likely to value teamwork and co-operation. And in most countries, students who exercise at least three days per week reported greater satisfaction with life than students who do not exercise outside of school. Students who do not engage in any moderate physical activity rated their satisfaction with life as 6.9 on a scale from 0 (the worst possible life) to 10 (the best possible life) while students who exercise once or twice a week rated their life satisfaction as 7.2, and students who exercise vigorously at least 3 days per week reported a life satisfaction level of 7.5 on the scale. However, this relationship should be interpreted with caution because students who did not report any physical activity may suffer from physical disabilities that prevent them from engaging in such activities.

Students who do not engage in any kind of physical activity outside of school – neither vigorous physical activity, such as running, nor moderate physical activity, such as walking or dancing – tend to fare poorly in several psychological and social outcomes, and are more likely to engage in risky behaviours. On average across OECD countries, students who reported doing some moderate or vigorous physical activity are three percentage points less likely to feel anxious about schoolwork, seven percentage points less likely to feel like an outsider at school, three percentage points less likely to skip school, and two percentage points less likely to be frequently bullied than students who do not engage in any form of physical activity outside of school.

Participation in vigorous physical activity



*B-S-J-G (China) refers to the four PISA-participating municipalities/provinces in China: Beijing, Shanghai, Jiangsu and Guangdong.

¹Lithuania acceded to the OECD on 5 July 2018. The OECD average does not include Lithuania.

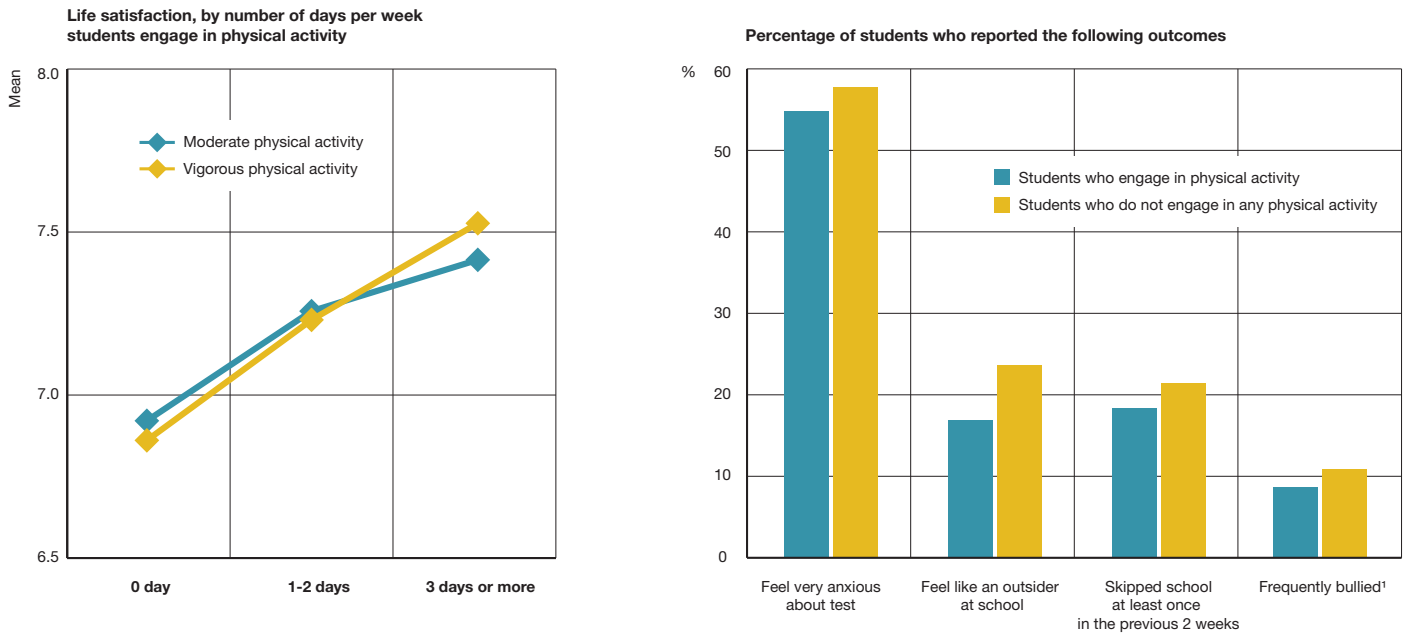
Countries and economies are ranked in descending order of the percentage of students who engage in vigorous physical activity at least three days per week.

Source: OECD, PISA 2015 Database, Tables III.11.9 and III.11.13.



Physical activity and well-being outcomes

OECD average



*A student is frequently bullied if he or she is in the top 10% of the index of exposure to bullying among all countries/economies.

Note: All differences are statistically significant between 3 days or more and 0 day of physical activity; and between students who engage in physical activity and those who do not.

Source: OECD, PISA 2015 Database, Tables III.11.16 and III.11.18.

But doing more sports does not necessarily lead to better learning outcomes.

Some research suggests that engaging in regular sports activities can improve teenagers' memory, perseverance and self-regulation. On average across OECD countries, engaging in moderate physical activity for at least 60 minutes per day appears to be linked, albeit modestly, to higher academic achievement. In most PISA-participating countries and economies, the number of days students engage in moderate physical activity outside of school is weakly, but positively, associated with average science performance. Similarly, there is a modest, but positive, link between moderate physical activity and students' ability to solve problems collaboratively.

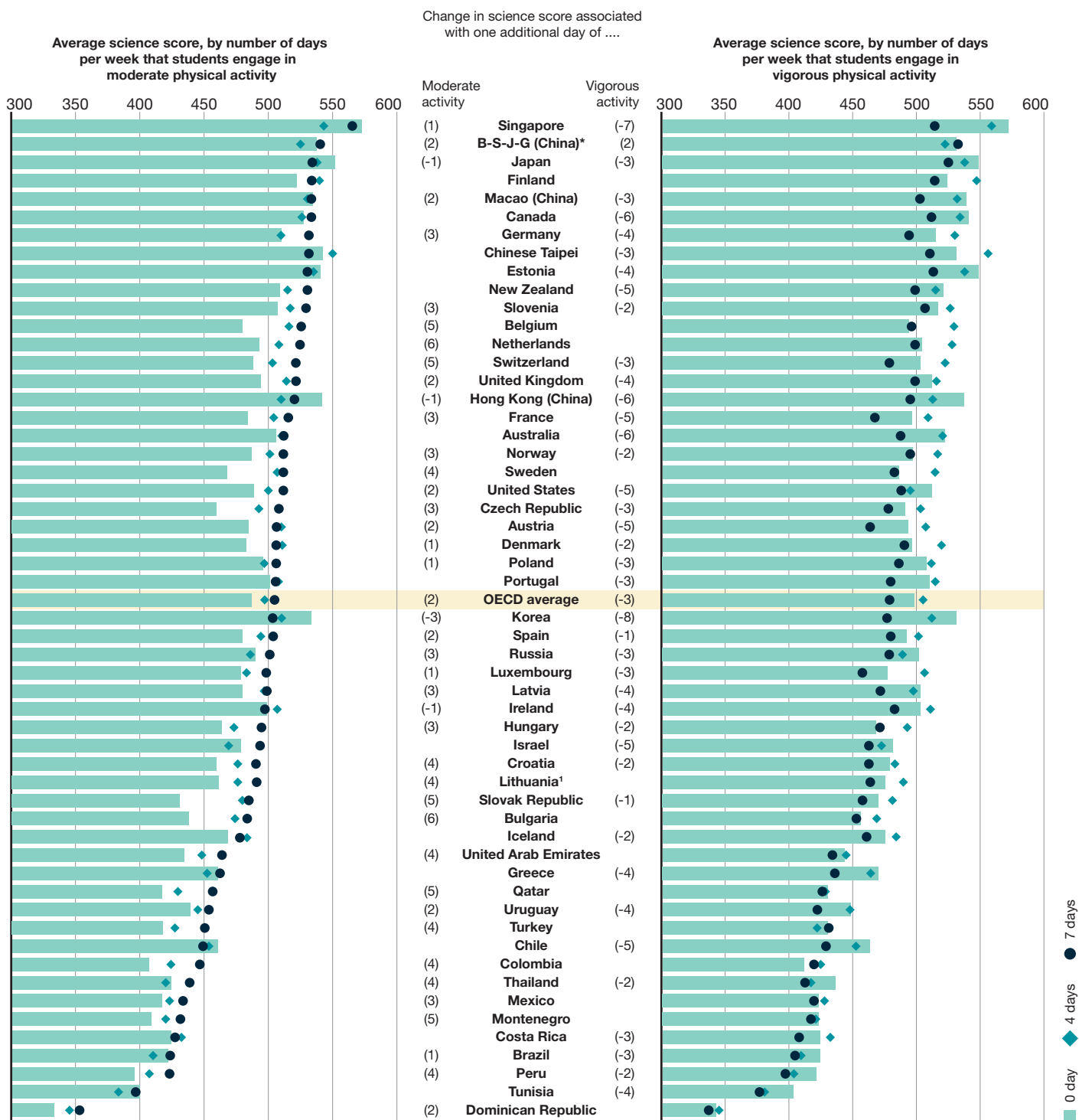
But the opposite relationship is observed when considering vigorous physical activity. Students who engage in vigorous physical activity outside of school seven days per week score lower in science than other students. An additional day of vigorous physical activity is linked to a three-point decrease in science scores, on average across OECD countries. Students who engage in vigorous physical activity every day score 25 points lower in science than students who exercise vigorously 4 days per week. In some of the top-performing countries/economies in the PISA science assessment, such as Hong Kong (China), Korea and Singapore, the negative association between an additional day of vigorous physical activity and science performance is stronger than that observed in other countries.

These patterns do not necessarily imply a causal link between physical activity and students' academic performance. For example, students in highly competitive schools might limit the hours they engage in physical activity, given the time they have to spend on homework and preparing for classes. Perhaps students who participate in a lot of sports activities belong to a group of students who assign a higher priority to success in sports than to academic achievement.

The bottom line

Participation in sports is not necessarily related to higher marks in academic subjects, but it is strongly associated with the well-being of teenagers and the adults they will become. Educators and schools can therefore bolster students' well-being with high-quality physical education and by helping them stay physically active, in and out of school.

Physical activity and science performance



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Note: Statistically significant change in science score associated with one additional day of moderate and vigorous physical activity, after accounting for students' socio-economic status and gender are found next to country/economy name.

Countries and economies are ranked in descending order of engaging in moderate physical activity at least seven days per week.

Source: OECD, PISA 2015 Database, Tables III.11.11a, III.11.12a and III.11.15.

For more information

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See: Mo, J. (2018), "What kinds of activities are common among teenagers who work well with others?", *PISA in Focus*, No. 84, OECD Publishing, Paris, <https://doi.org/10.1787/7cb73373-en>.

OECD (2017), *PISA 2015 Results (Volume III): Students' Well-Being*, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/9789264273856-en>.

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