

Fitness at a higher level

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Dumping cross-country from the PE curriculum is the result of one school's scientific approach to child health. **Heather McLean** checks out a radical scheme to improve young people's fitness

To the relief of many students at Ivybridge community college, cross-country running has been cut from the physical education curriculum. Tests on the pupils by Exeter University have shown that it is difficult to change a child's base metabolic rate through vigorous exercise. The Devon-based school has therefore pulled the torturous exercise from the schedule, replacing it with shorter-distance running and interval training.

Ivybridge is unique in that it has joined Exeter University's Children's Health and Exercise Research Centre in ICT studies into child health, development and fitness. The head of the centre, Neil Armstrong, who is professor of paediatric physiology at the university, has linked up with the school's headmaster, Geoff Reiss. As a result of this relationship, ground-breaking discoveries have been made into children's physiology, and the school's curriculum has been subsequently altered.

Malcolm Collins, the school's deputy principal and director of sport, says: "It's no good driving the children into the ground and watching them crawl off, as we now know they aren't getting any fitter. Exeter University's research has shown that we need to help students adopt a healthy lifestyle and help them get fitter for life."

The university has paid for two vehicles to ferry several students daily between school and the centre for testing and lessons. It has also set up a basic physiology lab at the school so that a constant stream of students can be monitored.

Among the research centre's hi-tech equipment is a magnetic resonance ergometer, which allows scientists to see how the energy stored in a child's muscle tissue is used. There are also plans to acquire a DEXA machine, which takes a low-dose x-ray image that tests bone density. This information helps researchers to determine which sporting activities can increase bone density and improve a child's skeletal structure.

Two pieces of equipment popular among students are the Bod Pod, an egg-shaped capsule that measures body mass with displaced air, and a water tank that measures mass and body composition.

Max Ansell, a 17-year-old studying for his BTec diploma in sports development and fitness, was tested over a period of three years. "It was good fun. I rode a bike in the school lab, which allowed my health to be

measured through my breath," he says. "They took a little bit of blood from my fingertips to test for lactate, and they did saliva tests. I learnt ways to motivate myself and how to be a better coach."

The use of ICT for research has encouraged the school to take a more scientific approach to teaching. Student participation has increased, which in turn has led to greater achievements in sport.

When Ivybridge became a sports college in 1997, it invested part of its £30,000 initial capital funding in basic second-hand gym equipment.

Having a gym encouraged students to take an active role in managing their health, so the school upgraded its facilities. It now has £60,000 worth of gym equipment that it is paying for over three years. A business plan funds the repayments using money generated by the school's community scheme. Outsiders can also use the facilities for a fee, although no profits are made from community memberships. In the last academic year, the school gym was visited 25,000 times by 400 people from the community.

Helen Jewell, a year 10 student, says: "They have really good quality equipment. I come to school to train in the gym at 6.30am for an hour and a half twice a week, and then at lunchtime or after school as well. I do 35 hours of sport a week."

Thanks to training by teacher Michaela Breeze, who won bronze and silver medals for weightlifting at the 2002 Commonwealth Games, Jewell is now the under-16 British weightlifting champion in her weight category and is also the under-18 junior weightlifting champion.

The rest of the school's funding has been invested in more specialised equipment. Inside the gym are four computers linked to the internet and the school's intranet. Each student has a spreadsheet detailing their work-out and progression, and they can access various health packages over the internet, including one showing the average values for aerobic capacity.

Any work created by students while in the gym can be saved to their personal files via the intranet. The school has 60 heart-rate monitors, 30 of which are basic models. The others allow users to download the details of their work-out on to a computer into the form of a graph.

The school has also invested in an electronic light gate (from £450) that is used to accurately time a run. To improve, students can go to the gym and work out, then come back and test themselves to see how much faster they've become as a result of that training. To assess body strength, the school has a power mat (from £550) that measures the time a student is in the air during a jumping exercise.

"Whenever students are using complex resources that also look impressive, they're somehow more motivated to work harder than they are if someone stands there with a stop watch," says Victoria Boomer, the deputy director of

sport at Ivybridge. "Now we have this equipment, they really put in 100% effort to their lessons and are getting much better results."

Ivybridge is also one of several Devonshire schools involved in a two-year digital video pilot. The package, from software company Dartfish, includes a laptop and digital camera (complete package about £4,000, software alone from £310). Students use the equipment to record performances in dance and gymnastics, analyse the results and even compare recent efforts with previous performances to spot points of improvement and weakness.

Research has shown that girls tend to end their involvement in sport when they reach puberty. The university is researching the physiological reasons for this, while Ivybridge has adapted its curriculum accordingly. The school now provides classes such as Pilates, boxercise and yoga to keep girls interested in exercise.

Meanwhile, the university has also discovered that children cope badly with temperature extremes. This is attributed to the fact that a child has a large body surface area in relation to their mass. Boomer says the school now keeps children with lower sporting ability inside in winter because of this. Boomer has also turned a yearly student sport participation survey into a detailed database of information using Microsoft's Access program and activity codes. It takes just five extra-curricular teacher hours per year to maintain, and teachers can easily gather the information in student interviews.

The database is used for program planning and to tally the activities and levels of individual students. The data is analysed to see how the school can adapt its curriculum and out-of-school activities. "We're trying to get a bigger picture of the kids, to find out how what they do when they leave school is linked with the choices they make about sport in school, and how we influence those choices," Boomer says.

No other UK university is involved in this type of link with a school, according to Exeter University's Armstrong. But that does not mean other schools can't equal Ivybridge's achievements. "Any school can replicate what we have done - all you need are teachers with the drive to do it," says Collins.

Make sport count

For schools looking to use sport to motivate students or encourage fitness, Vicky Boomer has this advice:

- Determine who you believe will use your facilities and draw up a basic list of equipment you think might be useful
- Talk to people in the know. Visit private health clubs and visit other schools that have basic gym facilities
- Relate what you learn back to the curriculum, using ICT equipment to engage students in the health, IT and scientific aspects of exercise

- Start small and only expand if there is demand
- Most importantly, don't fall for any company sales pitch
- More information about Ivybridge community college can be found at www.ivybridge.devon.sch.uk. Exeter University's website is at www.ex.ac.uk