highlights the increasingly athletic nature of Finn sailing, with bigger sailors entering elite competition at a younger age. The Finn requires enormous physical capabilities. Finn sailors are strong and have an excellent endurance capacity. One of the reasons is that the hiking position (more than 50% of time in the boat is spent hiking), combined with the free pumping rule above 10 knots of wind, in combination with the rig, requires huge physiological demands on the sailor. It is the hardest athletic experience in dinghy sailing. This is also shown by heart rate records during sailing with mean heart rate reaching 80% of the maximal heart rate over the whole race and peaking to 200 beats/min in certain parts of the race. Especially downwind, the Finn sailor pumps the mainsail one to one and controls the boat with dynamic actions of the whole body. In this whole context, Finn sailing is the most athletic dinghy and the sailors must be physically very fit.

It is this athletic and very physical nature of the boat that lends itself perfectly to the physique of elite athletes for which it caters. At Olympic level elite athletes in most disciplines are generally taller, heavier and more muscular than the general population. The Finn remains the only class that allows these athletes to compete at the Olympics.

Survey
The 2015 Finn Class survey took data from a smaller target group than in 2009. The average age of the group was 24, though it included about 50 per cent of the top 20 ranked sailors in the world.

The range of data included:
• Age range from 22 to 40 = 18 years
• Height range from 175-198 cm = 23 cm
• Weight range from 89-102 kg = 13 kg

For comparison purposes the data from the two surveys has been normalised to show the trends. The data from both surveys are shown in the graphs:

The major changes between the two surveys are:
• Average weight has increased by 2 kg
• Average height has increased by 1.1 cm
• The average starting age for the group has dropped by 6 months.

Opinion
According to leading sports science researcher Prof. Jan Bourgois, Professor of Exercise Physiology at Ghent University, “Your surveys in 2010 and 2015 on height, weight and age are really important.” “The general population is becoming taller and heavier. If you look at the boat classes selected for the Olympics in Rio, then you can see that people weighing more than 83 - 85 kg have practically no chance to compete at the Olympics, which means you exclude a lot of sailors.” “Furthermore, athletes participating at

Five years ago the Finn class carried out an extensive survey of its top sailors to accumulate data regarding the weight, height and the age they started sailing the Finn, to try and build a picture of the fleet and to examine how these factors changed over the years.

This year the class has carried out a similar survey to see how trends have changed, as well as looking at the longer term trend of those entering the class. The results build into an interesting picture of the class and show the current athletes as increasingly younger, taller and heavier than their contemporaries from past Olympic cycles. Part of this can be attributed to the growing size of the world’s population, but also it
the Olympics are generally taller, heavier and more muscular than the general population, except for course of some sports or disciplines such as gymnastics. Finn sailing could be compared, through height and weight characteristics, with swimming, rowing, athletics and basketball where performance is partly explained by anthropometrics: they are all tall, lean and muscular."

“For example, previous research on the anthropometric profile has shown that elite rowers generally have a height of 1.89 to 1.95 metres and a body mass of 90 to 93 kg.” (Bourgois et al. Physiological and Anthropometric Progression in an International Oarsman. International Journal of Sports Physiology and Performance. Volume 9, 4: 723 – 726, 2014)

Fitness
The survey also looked at fitness indicators
• bV02 Max varied from 5.1 to 5.68 l/min
• 2 km rowing times varied from 6.17 to 6.40 minutes
• Body fat index varied from 8 to 17% (average 12%)

Prof. Bourgois, who works at the same university where Dr Jacques Rogge carried out the first EMG studies on hiking in the Finn in a laboratory situation, continued, “Strength and endurance (VO2max absolute and relative values) capacity of Finn sailors are comparable with athletes from other sports disciplines such as rowing and basketball, which show the athletic demands of Finn sailing. Absolute VO2max of over 5.0 l/min means that Finn sailors, besides a needing a lot of strength, also need very good aerobic power (endurance).”

Numbers
Data is everything and the surveys show the evolution of the physique of young people taking up the Finn. The average age is getting younger, the weight and height are increasing, and interestingly, this survey shows the range is getting smaller, though it is still the widest range for any Olympic class. Sailing ability remains the key factor and the best sailor normally wins.

The trend for people becoming taller with increasing bodyweight continues. The survey also shows that Finns are sailed from an increasingly earlier age at international level and that there is an inevitable need for providing a suitable single-handed dinghy for young men, being naturally much bigger than their parents were.

Drawing a parallel with a survey carried out on a group of elite young rowers (British Journal of Sports Medicine) elite male junior rowers are 7% taller and 27% heavier than a reference group of the same chronological age. Within the group there were significant differences between finalists and non-finalists in body dimensions and body mass.

The final question we asked of the sailors was “what would you sail if the Finn were no longer an option as an Olympic class?” More than 80% said they would either carry on sailing the Finn as a non-Olympic class or would not sail an Olympic class at all. Without the Finn or another heavyweight dinghy, only 10% said they would try another Olympic class, and all those were under the average body weight of this survey. Those at or over average body weight felt they had no other options to remain in an Olympic class without the Finn.