THE VARIETIES OF PHYSIQUE OF WOMEN
ENGAGED IN SPORT

by

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The work I want to deal with to-day has been the culmination of a busy period every Summer. We have, from time to time, been interested in the shape of people who participate in various sporting events.

J. M. Tanner, at the Empire Games in Cardiff in 1958, carried out a fairly extensive somatotype survey among male athletes of international calibre. He found a good distribution, and a large correlation of somatotype with the event they chose.

(Dr. Robson then went on to illustrate his talk using the Somatogram Chart (see plate 1). He made reference first to work that has been carried out on male subjects.)

All men participating in sport up to international level are confined to the same group as the male physical education students we get at Loughborough Training College. On sub-dividing this group, Tanner found that right at the top, coming into extreme mesomorphy, were a group that included weight lifters, wrestlers and sprinters. Thus sprinters have an almost identical physique with the wrestler or weight-lifter. The middle-distance group come much more into ectomorphy.

Endomorphs are a sociable, food appreciating, rather lazy group, and put on fat very easily. Everything they eat their 40 feet of gut makes full use of; 40 feet of intestine rapidly absorbing every single sugar lump, every single calory it can get at. The ectomorphs, on the other hand, with their 20 feet of intestine are an extravagant sort of people, they're meat hungry, fill them up with steaks as much as you like and they just go straight through, they absorb a little bit, but don't put on weight.

With the male distributions in mind, of international level, we then looked at males and females who participated in sport, not because they were of international calibre, but because they'd enjoyed doing it as children and kept it up well on into adult life.

VARIATIONS IN THE PHYSIQUE OF WOMEN WHO PARTICIPATE IN SPORT AT A COMPETENT, THOUGH NOT GENERALLY NATIONAL, STANDARD. H. EVANS ROBSON.

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We have collected a group of about 110 female somatotypes and for the assistance with calculations, plotting, processing and measuring, I would like to pay tribute to all my colleagues. We have divided the group into four - a group of inactive controls, a group of women who teach physical education, but tend to specialise in modern educational dance, a group who swim - only two at international level, the rest recreational, with a good deal of swimming teaching and coaching, and another mixed group, athletics, gymnastics, ball-games and other games. It can be seen that we've not got the entirely endomorph biased population of Sheldon's group of college students. Most of them fall within the "circle" of the typical male somatotypes, a few come into the typical male somatotypes high in mesomorphy, quite a lot come into this high ectomorphic group, and a few, especially the swimmers, come into fairly extreme degrees of endomorphy. Going through each group one by one and looking at their distributions.

The first is the group of people who participate in dance. (See plate 1). Only one of the high endomorphic group, and I'm not altogether happy about our assessment, she may not be quite as high as six in endomorphy, although the tables say so. They tend to have a rather peculiar distribution; in this grouping would be found the male swimmers and another grouping where we'd find the male race-walkers. One girl in the course of one year managed to slip from one area to another and it altered her apparent somatotype. (Sheldon in his original description of somatotypes says that this is something with which you are born and you cannot alter it. Parnell talking about phenotypes regards measurements as those that one takes at the time, so we could say with more accuracy that these are measures of phenotype, rather than somatotype, and although this girl measured on three consecutive years, has slightly different magnifications, she hasn't altered at all.) Another managed to slip from the rather slim build to put on quite a lot of weight around the hips. She attributed it to going back to West Hartlepool, her home town, and spending quite a few years there, with good food. However, we have got quite a wide range of physique, some coming high in mesomorphy and therefore the sort that one would expect to be in the Corps de Ballet where a high degree of gymnastic ability is necessary. Interestingly enough, we do get quite a lot of the sort of build of the 'land rails', the 'sand-pipers', those long thin builds, rather lacking in mesomorphy, but still able to participate in modern educational dance to a high degree of competence.

In tennis, there is again a certain amount of variation; a bit of a scatter all round, and one candidate only managing to slip from a high degree of mesomorphy, in a four year period, to a fairly considerable degree of endomorphy although she denies it very, very strongly, and says she hasn't put any weight on at all. There has in fact been a stone and a half gain in weight, and an exact doubling of all fat folds. With the others, the group is fairly well centred around typical male

distribution. So among these competent players of tennis, there is quite a big range, but most of them are centering around mesomorphy with a high degree of endomorphy. These are not altogether very common female somatotypes in the general population.

In games, non-racquet games - hockey, netball, lacrosse, the subjects go well up into mesomorphy. Size seems to vary a good deal, but it's a far more homogenous population in games players than among the swimmers.

In athletics only very few have been measured. One girl measured on three separate occasions, when she started off as a very, very competent school-girl athlete, then she became a very junior physiotherapy student, still trying to think about training in her spare time, but by this time she was in her second year of physiotherapy, had a boyfriend and had got out of training. She hasn't altered in her physique at all, she's still got these very broad shoulders, narrow waist, a little bit of cushioning round the hips perhaps, but should be able to get back into top condition fairly easily. This girl is now aged 30, was a half-miler in her day, but married, matured and became a little bit thicker round the hips. With three coming at the three-four-four- level, we've got three very well known female sprinters all of Olympic medal standard. They are three of the leading international athletes and some of the few internationals we've got in the group - not too much endomorphy, they don't have to carry very much around with them, enough muscle to drive them and enough linearity to give them a good leverage system. So the internationals stand away in a group rather apart from the other groups. However, there are far too few to draw any valid conclusions.

With the gymnasts, again a very compact group, all well up into the typical male somatotypes and one, two three, four, five, six in territories that are right away from the typical female group. High degree of mesomorphy in most of them, very similar distribution to those of the athletes. So athletics and female gymnastics does require a great deal of power, not too much body weight, although in some forms of physical education that now come generally under the heading of gymnastics beginning to link on with dance, a good deal more variation in physique is permissible.

Lastly, a controlled group of girls who just happened to come into the laboratory for some purpose or another, perhaps to encourage a friend that we wanted. So with this group of volunteers, selected from those who are not participating actively in sport now, and who were rather thankful to give sport up as soon as they were permitted to do so at school, we have completely eliminated them from the group that we would associate as being the typical somatotypes of athletes. There are one or two who appear to have a mesomorphy rating of four. There are only two of them, but even these two with the mesomorphy four are

rather unusual. In nearly all of them mesomorphy is lacking, they're coming well into endomorphy and nearly all of them within the typical grouping of the average female somatotypes. I'm quite sure that if any had had a higher degree of mesomorphy to bring them up to here, they would not have given up sport quite so easily when they left school.

With the swimmers - a very very big variation indeed is seen. We find quite a lot of swimmers coming well into the extremes of endomorphy and swimming is just about the only physical activity for which they are physically built. It's a great shame that facilities for swimming tend to be so limited. I know we have good baths in many of our bigger cities, and our smaller towns have got swimming baths which occasionally are open, and as well stacks and stacks of openair swimming pools that can be used for about four or five days every summer, if it's a warm enough summer. However, there are groups of people of physiques that are very very common among women, even young women. There are young women who are physically not built for any sport except swimming, and these are the ones that I think we must try and look for early enough in life and direct them into an activity in which they are likely not to gain international honours but at least to be able to achieve a fairly high degree of competence. Surprisingly, we did find quite a few in the extreme ectomorph grouping, starting off with this one who ends up as a two-three-six, the sort of person that one would normally say has got too little mesomorphy to engage in any strenuous physical activity unless it's very long walks by herself.

This group really should have been part of Dr. Bleasdale's communication. These have been photographed and some anthropometric measurements have been done, but we have not had a complete somatotype on them. Now although there is a certain amount of variation in their physique there is nothing like the amount of variation we've got among those who just swim with a high degree of competence as recreation. So this group show a uniform high degree of mesomorphy, fairly low degree of endomorphy, and without having examined them or having access to any data, they all seemed to fall very much within the areas that we've already demonstrated amongst gymnasts and athletes. So the athletic girl could become an international swimmer. The international swimmer if deprived of the water, could quite easily adapt herself according to her physique to running and the field events. We don't get the extreme endomorphic people that one says is the typical physique of the swimmer - the enormously fat person with a good deal of muscle as well.

I have tried to show then that where there is the correct physique for the correct event there seems to be a good chance of achieving a high level of competence in it. But even people with physiques that seem to be complete misfits for competitive sport of the highest level can manage to get to a high degree of competence in other activities, even such unusual ones as swimming for ectomorphs, and darts for endomorphs.