

Carpenter, T. L. and Day, D. (2010) *A Precarious Relationship: Sport Science and Coaching*. British Society of Sports History Annual Conference, Friday 10 – Saturday 11 September at Wellcome Collection, London.

## **Abstract**

The need to improve British Sport in terms of success, efficiency and organisation can be traced back to the British failures at the Stockholm Games in 1912. Despite gradually diminishing international performances British policy makers did little to try to resolve the problem and the poor performances continued, something which the British public had now become accustomed to. However, the poor result at the 1952 Helsinki Games may have acted as a catalyst to improve the success of the British teams on the international stage because in 1960 The Wolfenden Report suggested that improvement was potentially linked to a relaxation in amateur rules and the introduction of scientific methods of training. Perhaps this provided the impetus needed because in 1965 the British Olympic Association expressed a desire to improve performance from means other than those of standard training. This marked a pivotal moment in British sport as it heralded a move away from the traditional amateur ethos which has gradually become marginalised as the guiding principle in British sport. This paper traces the development of Sports Science in Britain since the 1960 paying particular attention to events which led to the institutionalisation of Sports Science. Reference will also be paid the tentative acceptance of Sports Science by some and potential reasoning for this and the continuing resistance among some parts of the coaching community to the implementation of positivistic experimental science.

**Keywords:** history of sports science, amateurism, altitude training, history of coaching

## **Poor sporting performance**

Following the poor performance of the British team at the Stockholm Games in 1912 there was general outcry after what was considered a less than adequate display by British athletes. The comments made by F.A.M Webster at the time seemed to reflect the thoughts of a nation, he expressed 'a feeling of shame that we should fall so low as to be beaten by even lesser European nations, who for generations past have been our pupils in all sporting pastimes'.<sup>1</sup> Some declared a concern over the impact that the failures in sporting pursuits could have on British prestige, with an article in *The Times* suggesting 'Whether we took that result very seriously ourselves or not, it was widely advertised in other countries as evidence of England's decadence'.<sup>2</sup> It was clear that the nations feeling of unequivocal failure following the British defeat on the most public of sporting stages was widely felt, with some even suggesting that the correct and obvious move would be to simply withdraw from the Olympic movement altogether.<sup>3</sup> F.A.M Webster was one of the many individuals who expressed a feeling of concern over the poor British sporting performances, however British policy makers appeared to view this from a position of indifference and did little to try and resolve the problem.

Despite the very public appeal urging for an improvement in British sport, sporting failure continued particularly during the periods of 1948-1953. During which time the English cricket team were beaten by Australia and the football team were defeated by America in their first venture to the World Cup in 1950 which was soon followed by the loss of its unbeaten home record to Hungary in 1953.<sup>4</sup> It would seem that poor sporting performances were something that the British public had become accustomed to.

---

<sup>1</sup> Physical Education Department, University of Birmingham, *Britain in the World of Sport: An Examination of the Factors Involved in Participation in Competitive International Sport* (Birmingham: The Physical Education Association, 1956), 6.

<sup>2</sup> *The Times*, 18 August, 1913, 6.

<sup>3</sup> *Ibid.*

<sup>4</sup> Physical Education Department, *Britain in the World of Sport*, 7.

However, national apprehension over poor sporting ability was made particularly apparent following the 'ghastly failure of the British team at Helsinki'<sup>5</sup> in 1952, which culminated in a gold medal total of just one. This failure was particularly difficult to accept considering the single gold was achieved by a horse rather than the British athletes, who, as Park suggested, for generations passed had been the ones 'who had taught the world to play'.<sup>6</sup> Once again the critics surfaced, but this time it was the ill-equipped British training methods and the amateur tradition that was to be questioned. *The Times* suggested that 'the root of the problem of British participation in international sport. Far too frequently British athletes are reared in the laboratory atmosphere of stop watches, statistics and records. Many critics have publicly drawn attention to the danger of this approach undermining the will to win. Unfortunately, those critics have been exonerated'.<sup>7</sup> The overwhelming sense of failure had returned and John Disley who was acting chief instructor at the Central Council of Physical Recreation (CCPR) centre even questioned whether 'if years of preaching that,...'be a good loser', and 'the important thing is the taking part and not [the] winning', has built up a psychological barrier to winning in the British youth'.<sup>8</sup> A culmination of factors such as the prominent defeats of British sporting teams leading up to 1952 coupled with the poor result at the Helsinki Games appeared to provide an impetus to improve the success of British sport on the international stage because in 1956 a group of physical educationalists at the University of Birmingham published a pamphlet entitled *Britain in the World of Sport*. This report concluded that if Britain was to improve in terms of success in sport then the 'traditional' amateur rules needed to be relaxed somewhat and some form of intervention was required. They suggested that 'rising standards are paid for by training which is both more intensive and extensive. The single-minded attitude to sport, which makes such training possible, is not easily allied to the detachment necessary to regard the result as unimportant'.<sup>9</sup> Although this was considered unorthodox by the traditionalists in British sport; the seed for intervention in British sport had been planted, whether that be of a financial or scientific nature. It could be argued that although many considered the suggestion as heresy, support for the idea of intervention began to grow. It is clear to see why many have considered *Britain in the World of Sport* as the primary catalyst for *The Wolfenden Report*, which since its publication in 1960 has long be considered the 'blue-print' for sports development in Britain.<sup>10</sup>

*The Wolfenden Report* of 1960 headed the calls of many who had demanded a new approach to sport in Britain, perhaps the direct result of the success and developments of sport in other countries and a growing concern that sport now had a much larger role to play within society. *The Wolfenden Report* developed into a commodity of great significance, not only did it raise the profile of sport in Britain it also indirectly led to developments such as the introduction of scientific measures to sport. Despite this somewhat impressive haul of achievements as Coghlan noted, when the Wolfenden committee was initially established it 'aroused no particular concern other than general broad interest and yet the results flowing from the fifty-seven recommendations were alter the face of British Sport within a decade'.<sup>11</sup> The report suggested that 'all sports which include competition at international level are being subjected to the pressures or rising standards and the need for more extensive and intensive training'.<sup>12</sup> The committee went on further to suggest that 'with very limited resources available to them

---

<sup>5</sup> *The Times*, 7 August, 1952, 7.

<sup>6</sup> Roberta Park, 'Cells or soaring?: Historical reflections on 'visions' of body, athletics, and Modern Olympism', *International Journal of the History of Sport* 24, no. 12 (2007): 1701-1723.

<sup>7</sup> *The Times*, 13 August, 1952, 5.

<sup>8</sup> John Disley, 'Reflections on Soviet sport', *Physical Recreation*, no. 1 (1956): 71-72.

<sup>9</sup> Physical Education Department, *Britain in the World of Sport*, 5.

<sup>10</sup> Lincoln Allison and Terry Monnington, *Sport Pretige and International Relations, of The Global Politics of Sport*, ed. Lincoln Allison (Oxon: Routledge, 2005), 119.

<sup>11</sup> John Coghlan, *Sport and British Politics Since 1960* (London: The Falmer Press, 1990), 8.

<sup>12</sup> Wolfenden Report (Chairman: Sir John Wolfenden), *Sport in the Community* (London: CCPR, 1960), 60.

several medical and scientific groups have carried out constructive and instructive work...we see a real opportunity here...to encourage and stimulate an increased and wide-spread interest in the medical and scientific matters related to sport.<sup>13</sup> Recognition was finally given to the fact that more sophisticated training developed from scientific research was needed if success was to be achieved on the international stage. Yet despite this glimpse of promise it is apparent that the traditionalists still retained a major influence in British sport when they argued 'it is not the end of the world if British teams are defeated, still less is it a symptom or proof of national decadence'<sup>14</sup> and that 'it is better to lose gracefully and good-humouredly than to win by sharp practice or unsportsmanlike conduct.'<sup>15</sup> It was clear that until some relaxation of the traditional amateur rules was set in motion there was no prospect of any form of scientific intervention being applied to British sport. However, *The Wolfenden Report* of 1960 potentially provided the means for such a change to occur.

### **Altitude research and the British**

The 1960s in Britain was the era in which research and documentation into sport began to grow, something which was previously absent in British sport. Prior to 1965 particularly, apart from a limited amount of insufficient facts, there was very little information available in the fields of sports science. Coghlan has suggested that 'if a case was to be made for greater public investment in sport, ran the argument, more information must be available to sustain that case'.<sup>16</sup> Whether this is true, or if the successes of nations such as the Soviet Union and America, with their very sophisticated and advanced sports science systems, had finally caught the attention of the nation is unclear. It could have been a culmination of factors that led the BOA to express a desire for control over sports science research in Britain which ultimately led to the launch of their Mexican research project into altitude in 1965. This represented a pivotal moment in the history of British sport as this was the first time that a British sporting organisation had undertaken such a costly research project (£5,000 had been allocated, which consisted of £2,500 from the Government via the Sports Council and £2,500 from the BOA itself).<sup>17</sup> As Heggie has noted, the relative novelty of the BOA engaging in such a research project may be lost on modern audiences but this was the birth of a modern, medicalised, 'expert' BOA.<sup>18</sup> The object of the research project was 'to find out how British Competitors are likely to react to the conditions in Mexico City at the Olympic Games in 1968, and to support findings with such physiological tests as seem necessary'.<sup>19</sup> The research project was initiated in Britain on the 4<sup>th</sup> October 1965<sup>20</sup> and was conducted by Dr L.G.C Pugh, Dr J.R Owen and John le Masurier<sup>21</sup>. Shortly after this the team (along with their 6 athletes) travelled to Mexico on the 6<sup>th</sup> November 1965.<sup>22</sup> The results of the research project demonstrated that the with regard to acclimatisation the BOA had recommended that 'all endurance competitors in the 1968 British Olympic Team should arrive in Mexico City approximately 4 weeks before the opening ceremony...competitors in explosive events should arrive in Mexico City a minimum of 3 weeks beforehand'.<sup>23</sup> Such a conclusion placed the International Olympic Committee (IOC) in a dilemma because to be considered an amateur in 1960 under the rules of Olympic competition an athlete was not permitted to spend more than 4 weeks in one

---

<sup>13</sup> Ibid., 83.

<sup>14</sup> Ibid., 58.

<sup>15</sup> Ibid., 59.

<sup>16</sup> Coghlan, *Sport and British Politics*, 45.

<sup>17</sup> British Olympic Association committee minutes, 14 July, 1965.

<sup>18</sup> Vanessa Heggie, 'Only the British appear to be making a fuss: The science of success and the myth of amateurism at the Mexico Olympiad, 1968', *Sport in History* 28, no. 2 (2008): 213-235.

<sup>19</sup> British Olympic Association committee minutes, 2 June, 1965.

<sup>20</sup> British Olympic Association committee minutes, 24 June, 1965.

<sup>21</sup> Ibid.

<sup>22</sup> Ibid.

<sup>23</sup> British Olympic Association, *Report of medical research project into effects of altitude in Mexico City in 1965* (London, 1966).

year at a designated training camp.<sup>24</sup> President and Vice-president of the IOC, Avery Brundage and David Burghley, respectively, had strongly held beliefs about the principles of amateurism both of which reflected the principles of amateurism that Coubertin had created. Therefore, a decision needed to be made regarding not only the length of time required to adjust to the elevated altitude level but also the length of time permitted under the amateur ruling. Discussions between Brundage and Burghley began and despite the large amount of research carried out on the issue of altitude it would seem that the British study was considered one of the most significant as this was the most frequently mentioned in the negotiations. Finally the IOC decided that 'to achieve fairness as far as possible between competitors, no athletes, other than those who usually live or train at such heights shall specifically do so at high altitude for more than 4 weeks in the last 4 months before the opening of the Games'.<sup>25</sup>

The altitude debate seemingly acted as a key moment in the history of amateur sport; it had been established that athletes who by pure chance had been born, grown up and trained at high-altitude were predisposed to success in endurance events. As a result it has gradually become accepted that those athletes who had been born at sea-level could replicate such success by training or living at altitude. As Wrynn has suggested, perhaps one of the factors that spelled the end of amateurism more than any other was an understanding that living and training at altitude could potentially improve performance in certain events. Consequently, athletes needed the freedom to live and train where it would be best to improve their own performance.<sup>26</sup> From a British perspective, the fact that the study commissioned by the BOA was considered so highly was a boost for British sport and science. Britain had undertaken its first body of research into the scientific aspects of sport, which had been partly state funded and subjected to criticism and the fact that it was considered an overwhelming success seemingly provided the confidence researchers required to continue. It could even be suggested that this was the initial event which caused the institutionalisation of sports science in Britain since it appeared to 'open the floodgates' for the acceptance and use of sports science. This was further enhanced by the work undertaken in response to the increasing use of ergogenic aids and drug abuse which became a major issue during the 1960s. With regards to the use of anabolic steroids the BOA believed that 'in the doses alleged to be used by some athletes to give an improved performance, there is a grave risk of danger to health, such as sterility in the male...other affects may not be apparent immediately'.<sup>27</sup> This uncertainty regarding the effects of such a substance on health and the moral issue concerning its use led to the Sports Council offering a grant to the British researcher, Professor Brooks in 1973. Three years later Brooks was credited with the development of the initial method to detect the use of anabolic steroids in the urine<sup>28</sup>, yet another boost for British sports science. Also the scientific work that was being carried out in universities and higher education institutions during the 1960s that was beginning to focus on the experimental psychology and physiology into sport heralded the start of a research programme that would develop into sports science in the academic capacity which is commonplace today.

### **Early sports science and amateurism**

The BOA Mexico research project could be described as the birth of sports science in Britain due to its influence on the dramatic increase in the development of sports science which can be seen post 1960s. However, the capacity in which we recognise sports science today can be traced back to the late nineteenth and early twentieth centuries.

---

<sup>24</sup> Comité International Olympique, 'Training Camps', *Olympic Review*, no. 1 (1967), 22.

<sup>25</sup> British Olympic Association press statement, 7 July, 1966.

<sup>26</sup> Alison Wrynn, 'A debt was paid off in tears: Science, IOC politics and the debate about high-altitude in the 1968 Mexico City Olympics', *International Journal of the History of Sport* 23, no. 7 (2006): 1152-1172.

<sup>27</sup> BOA memorandum on anabolic steroids, 14 Dec. 1966.

<sup>28</sup> Coghlan, *Sport and British Politics*, 45.

Conversely, it is clear that the aims of these early forms of research which were carried out on the human body were not to increase athletic potential, as Hoberman has indicated:

the scientists who turned their attention to athletic physiology during the late nineteenth and early twentieth centuries did so not to produce athletic wonders but to measure and otherwise explore the biological wonders presented by the high performance athlete of this era. It was a time, one scientist of the age wrote, when phenomena once considered mere curiosities or freaks of nature called out for scientific investigation.<sup>29</sup>

There are many examples to demonstrate this, for example, research by Zoth in 1899 was focused on the pedalling action of cyclists and concluded that muscle physiology played a specific role in the execution of such an activity. However there was no mention of the possibility of applying the research findings to the improvement of performance.<sup>30</sup> Possibly because of the scientific marginality of sport during this time or for the simple fact that the scientific discoveries which these researchers were unearthing were in themselves interesting enough that there was no desire to apply this to anything else. It also needs to be considered that during this period the principles of training, which would have been enforced by the trainer or coach were focused around the repetition of skills in order to improve technique and co-ordination. As Ritchie and Beamish have noted, it was believed that the attributes such as power, speed and agility were unchangeable and that improvement was only achieved through greater co-ordination and precision.<sup>31</sup> The emergence of the likes of the Soviet Union, in which sport was used to demonstrate the superiority of the communist way of life, caused a shift in the role that sports science had to play, particularly in the post-1945 period. The Soviet Union began to devote resources in order to achieve success and prestige through victory in sporting competitions on the world stage, which was achieved via sophisticated and comprehensive sports science systems. Despite the ethical issues which were set to emerge in the coming years, it was clear at the time that such practices had paid dividend. It is apparent, however, that there was a significant lag of approximately twenty years between the emergence and acceptance of sports science and the uptake in British sport possibly as a result of the adherence to the strict amateur ethos which continued to reign in Britain. There was a feeling that, British sport which was underpinned by an unwritten moral code and controlled by a clear amateur ethic, did not require science, because ultimately the result was of secondary importance. As Heggie has stated, to train too hard, to dope, even to take a specific diet and to be overly concerned with winning were just 'not cricket'.<sup>32</sup> The most important rule of all was to win with dignity and lose well and as Holt has suggested, losing was acceptable as long as you 'did your best'.<sup>33</sup> The sentiments of the British football administrator, Sir Stanley Rous in 1953 appear to sum up perfectly the British attitude towards sport and science at this time, 'the British, compared with many other nations, usually go about their games in a surprisingly unserious way...who cares what effect [exercise] has on chemical structure of a muscle.'<sup>34</sup>

### **Resistance to sports science and the coach-sports scientists' relationship**

As previously discussed, since the 1960s however, work into sports science has gradually increased and become accepted within society, albeit tentatively by some.

---

<sup>29</sup> John Hoberman, *Mortal Engines* (New York: Free Press), 10.

<sup>30</sup> Oskar Zoth, 'On the forms of pedal work in cycling' [in German], *European Journal of Physiology* 76, no.7-8 (1899): 319-355.

<sup>31</sup> Rob Beamish and Ian Ritchie, 'The paradigm shift in the science of training and the use of performance-enhancing substances', *Sport in History* 25, no. 3 (2005): 412-433.

<sup>32</sup> Heggie, 'Only the British appear to be making a fuss', 230.

<sup>33</sup> Richard Holt, *Sport and the British: A Modern History* (Oxford: Clarendon Press, 1992), 97.

<sup>34</sup> Stanley Rous, 'Foreword' of *Fitness and Injury in Sport. Care, Diagnosis and Treatment by Physical Means*, ed. Simon Knight (New York: Van Nostrand, 1953).

Despite the many advances which occurred following the BOA Mexico research project there were still those who appeared reluctant to accept these new developments. For example, a Commander Mackay wrote to Dr Raymond Owen of the BOA stating that 'subject of artificial acclimatisation to altitude. This matter had been subject of debate since the abstracts of some papers, presented at the Russian conference of experts in altitude physiology and sport in 1965, did suggest the possibility of using altitude chambers to assist acclimatisation.'<sup>35</sup> The acclimatisation chambers were offered to the BOA for them to use as they saw fit, however, the BOA refused to take up the offer. Further correspondence between Owen and Kenneth Sandilands 'Sandy' Duncan again of the BOA appeared to provide some insight into why the chambers were not used, it was stated that 'although it may be possible that the Loughborough one may show something, it would seem that we were quite right when we said there was as yet nothing definite to prove that these chambers would help us- in other words we do not seem to have missed out on anything.'<sup>36</sup> The assumption would be that after all the evidence available demonstrating the benefits of training at altitude or in this case 'artificial' altitude, that the BOA would have been very keen to take up the offer. But it is clear that perhaps the traditional amateur ethos which reigned over British sport for so long had once again prevented the use of positivistic experimental science. Another example to demonstrate British reluctance to integrate sports science with training is concerned with the 'French Government [offering] British athletes the use of their Olympic training centre at Font Romeu in Pyrenes'.<sup>37</sup> An article in *The Observer* proclaimed

Walter Winterbottom wrote to all governing bodies telling them that the French had invited us to use the centre in Font Romeu and pointing out the evidence that the more acclimatisation an athlete could get the better it would be. The response from the 20 or so sports which face the biggest Olympic problem in their history was "some interest".<sup>38</sup>

It was further suggested that Britain could do well in international sport because 'we have the technology, the know-how and yet we are not using it'<sup>39</sup>, similarities can be drawn between this and an article in the *The Times* in 1927 which it stated 'British performance was a crime against nature. You have the finest raw material in the world...and you persistently neglect to develop it'.<sup>40</sup> British sport had moved on some forty years but had seemingly failed to develop with regards to sports science and although there was acceptance by some, the overall feeling was that of reluctance. This internalised resistance between sport and science reached far into 1980, however since then sports science has gradually become institutionalised. Particularly in the last twenty years it has become a centralised part of coaching and athlete preparation.

The slow development of professionalisation in British sport does raise the question about whether a symbiotic relationship has been established between the professions of coaching and sports science or if this has developed into a mutually antagonistic affair. There is evidence to suggest that tensions do in fact exist in the relationship. The purpose of sports science is to enhance athletic performance through the development of scientific knowledge and the purpose of coaching is to improve performance through interventions in preparation and training. However, Brackenridge argues that the shared goal of the two individuals, which is that of performance enhancement, is perhaps not compatible with their other goals. An example of this relates to the sports scientists, the

---

<sup>35</sup> British Olympic Association letter, Surgeon Commander D.E. Mackay to J.R. Owen, 22 March, 1967.

<sup>36</sup> British Olympic Association, J.R. Owen to K.S. Duncan, 29 March, 1967.

<sup>37</sup> *The Times*, 2 July, 1966.

<sup>38</sup> *The Observer*, 28 May, 1967.

<sup>39</sup> *Ibid.*

<sup>40</sup> *The Times*, 2 August, 1927, 6.

majority whom work within academic institutions where the pressures exerted on them via initiatives such as the Research Assessment Exercise are so great that perhaps they have a tendency to place papers above people.<sup>41</sup> It also had to be considered that prior to 1970 particularly, before sports science was recognised as a legitimate academic discipline, virtually all of the ideas about training and exercise that coaches had gained had developed from observation and intuition. Therefore, it could be suggested that the majority of coaches already possess a strategy that is effective and would be reluctant to alter this based on the grounds of scientific research. Coaches have historically implemented techniques and methods well in advance of the science proving or disproving that they are effective. Renowned athletics coach, Arthur Lydiard is once noted to have said 'Coaches already know what works, and the scientist's job is to tell them why it works!<sup>42</sup> In a similar vein, athletics coach Steve Jones explained 'I make it simple...there's no science in it, no heart-rate monitors, nothing . . . it's just about running instinctively . . . none of it comes out of a book. It all comes out of my own experience.'<sup>43</sup> However, it is not strictly true to assume that the coach is always correct and it is feasible to suggest that some often neglect to use methods that would improve performance or are unaware of the techniques available to them. Such an issue is highlighted by Reade, Rodgers and Hall who indicated that although the majority of coaches are likely to consult other coaches to get new information there are also those who are willing to incorporate sports science into their training but do not have the means to access such information.<sup>44</sup>

It is clear that a small proportion of coaches' remain suspicious about the incorporation of sports science into an athlete's training regime, which could potentially be a throwback to the traditional amateur ethos, and that time constraints and commitments on the sports scientists themselves can often hinder the success of such integration. However, key individuals appear unaware or refuse to acknowledge the tensions that exist. Neil Spurway, chair of The British Association of Sport and Exercise Sciences (BASES) from 2000-2002 claimed that 'sport science has added to the recent achievements of UK sport -particularly at the Sydney Olympics.'<sup>45</sup> Conversely, one World Class Advisor of the UK sport institute is noted to have commented that 'the trouble with sport science is that...unsophisticated demand plus research-focused supply equals no effective application.'<sup>46</sup> In conclusion, it is clear that little evidence is available to demonstrate that coaching and sports science have yet reached a mutually beneficial and productive relationship. As Brackenridge suggests, if this is to develop into a more dynamic rapport, scientists seeking sound ecological validity need to ground their research in genuine practical problems and coaches seeking sound science should select scientists who can speak to them in the language of sporting practice.<sup>47</sup>

---

<sup>41</sup> Celia Brackenridge, 'Ostrich or eagle? Protection and professionalism in sport science and coaching' (Paper presented at the annual conference of the British Association of Sport and Exercise Sciences, Newport, South Wales, September 4-7, 2001).

<sup>42</sup> Ross Tucker, 'Coaching and science: What's the big deal and who cares for the science?', *The Science of Sport*, <http://www.sportsscientists.com/2009/10/coaching-and-science-asset-or-liability.html> (accessed August 23, 2010).

<sup>43</sup> Simon Turnball, 'It's easy to keep up with the Jones boy- but then he is 54', *The Independent*, 25 October, 2009, <http://www.independent.co.uk/sport/general/athletics/its-easy-to-keep-up-with-the-jones-boy-ndash-but-then-he-is-54-1809041.html>.

<sup>44</sup> Ian Reade, Wendy Rodgers, and Nathan Hall, 'Knowledge transfer: How do high performance coaches access the knowledge of sport scientists?', *International Journal of Sports Science and Coaching* 3, no. 3 (2008): 319-334.

<sup>45</sup> BASES, *Annual Report 2000-2001* (Leeds: Coachwise, 2001), 4.

<sup>46</sup> Brackenridge, 'Ostrich or eagle?', 12.

<sup>47</sup> Ibid.