

# ICONS OF SEM

ARTICLE BY GRAHAM HOLLOWAY

## Dr William Penny Brookes - Father of British Exercise Medicine?



Dr William Penny Brookes

In this mini series we will look at some of the iconic personalities who played a major part in the development of the specialty of sport and exercise medicine.

We commence with Dr William Penny Brookes (1809-1895). Born in the town of Much Wenlock, in the heart of Shropshire, he was the son of the local doctor and surgeon. Having trained firstly as an apprentice to his father for 5 years from the age of 15, he then studied at St Thomas' Hospital, London and in hospitals in Paris and Padua, qualifying in 1831.

On learning of his father's death he returned to Much Wenlock to take over his father's large medical practice. Brookes was convinced of the benefits of exercise for children and adults alike for the prevention and treatment of many illnesses and appreciated the link between physical and mental strength. By observing men's posture he could deduce their occupation and realised that children needed to be trained physically from a young age in preparation for a life of manual work. He spent his life striving to get Physical Exercise included in the curriculum of all schools, and for this alone he should be considered to be the Father of Exercise Medicine in Britain.

### WENLOCK AGRICULTURAL READING SOCIETY

He also realised that many children left school at 12 and were ill equipped academically as well as physically. He was the driving force in the development of the Wenlock Agricultural Reading

“

He spent his life striving to get Physical Exercise included in the curriculum of all schools, and for this alone he should be considered to be the Father of Exercise Medicine in Britain.”

Society in 1841 which started as a lending library so that farmhands could read about new agricultural advances, teaching them to read when necessary. He was motivated by the plight of the working classes, whose knowledge he wanted to improve with lessons and interest groups or 'classes' on a multitude of subjects, such as reading, writing, botany and art. But he also wanted to improve their health with physical activity. He admired the ethos of the ancient Olympic Games - that they were open to every grade of man, ideals that were sadly lacking in England at that time. One of the classes he set up in 1850 was the 'Olympian class' *"for the promotion of the moral, physical and intellectual improvement of the inhabitants of the town and neighbourhood of Wenlock and especially of the working classes, by the encouragement of outdoor recreation, and by the award of prizes annually at public meetings for skill in Athletic exercise and proficiency in Intellectual and industrial attainments"*.

The first games were to take place the same year and their announcement received heavy criticism because of Brookes' insistence that the Games were open to the working classes. People thought there would be a large number of scantily-dressed young men performing in front of women. It was felt that such an event would cause *'drunkenness, rioting, lewd behaviour, and that men would leave their wives!'*

Undeterred, on the chosen day, he arranged for his 'class' to meet at the Town Hall and, headed by a band, the procession walked a mile through the town and up a hill to the sports field where the competitions were to take place, with a celebration in the town at the end. Fortunately, the Games were a huge success and none of the threatened disturbances occurred. The early events consisted of athletics and traditional country sports such as quoits, football and cricket. The highlight was an equestrian event, 'Tilting', where a competitor on horseback had to spear a ring suspended from an overhead beam, the aperture of the ring being only one inch. Later he would include cycling on penny farthings, bowls and swimming. It always included a fun event such as a blindfolded wheelbarrow race. Though the athletic events were mainly contested by adult males, there were children's races and, for women, cookery and haberdashery competitions and prizes for art, poems and essays, open to all.

Over successive years the Games became more popular and attracted competitors from as far as Newcastle and thousands of spectators, but they always started with the procession. For ease of transport, he bought a railway company and had a railway line laid from the mainline to Much Wenlock with the station adjacent to the entrance to the sports field. One problem he faced concerned prizes; the working classes needed prize money, especially if they had to take time off work to compete, which would attract professional athletes country wide. On the other hand, the upper classes did not need money and wanted medals to show off their prowess.

### THE WENLOCK OLYMPIAN SOCIETY

Dr Brookes so admired the Ancient Greek democratic ideals; that all men were equal and able to vote and partake in sport, that he started communicating with the organisers of a revised Olympic



Games which had been revived in Athens by a rich merchant, Evangelos Zappas, an Albanian by birth but of ethnic Greek origin. These events were only for Greek speakers. However, in 1858 Brookes sent a prize of £10 to be awarded to the winner of the Seven Fold Foot Race,

and the winner, Petros Velissariou, became the first honorary member of the Wenlock Olympic Class. By 1860 the Wenlock Games were so successful that Dr Brookes founded the Wenlock Olympian Society and the Games moved around the towns of Shropshire each year. In 1865, he was also instrumental in setting up the National Olympian Association (NOA), based in Liverpool, with John Hulley, a gymnast and physical education entrepreneur and E G Ravenstein, the president of the German Gymnastic Society of London. Their first Olympian Games, a national event, held in 1866 at The Crystal Palace, London, were a surprising success and attracted a crowd of over ten thousand people. ➔



Prize giving

A young 18 year old cricketer, W G Grace was playing cricket for England v Surrey nearby and after scoring 224 not out in England's total of 521 asked his captain if he could be excused briefly to partake in the games. In spite of all the running he had already done that day, he entered the 440 yards hurdles event and won it in a time of 1 min 10 seconds. The Amateur Athletic Club, consisting of mainly Oxford and Cambridge athletes, objected to competing against lower class 'professionals', so they subsequently became a rival organisation to the National Olympian Association, holding their championships a month before the NOA.

The NOA survived until 1883 as a multisport event and the Amateur Athletics club, which concentrated on track and field events, amalgamated with other athletic clubs and became the Amateur Athletics Association.

Once the Wenlock Games had become established Brookes pursued his dream of getting physical education in the school curriculum. School for under 12 year olds only became compulsory in 1870 and he saw this as an opportunity. The following year he attended the local school armed with a tape measure and watch, taking physical measurements of the circumferences of arms, forearms, chest and breath holding times of 12 schoolboys. 6 of them carried on their lives as normal, the other 6 doing additional regular gymnastic training, using a vaulting horse, horizontal and parallel bars.

Six months later he returned and measured them again. Whilst there was little change in the limb circumferences in either group, there was a striking increase in chest circumference and breath holding ability in the exercised group. They appeared stronger and had suffered less ill health. He published his results widely and added vaulting and horizontal bar competitions to the next Wenlock Games.



Dr W G Grace

“**He attracted the interest of many senior, high ranking and influential people from many walks of life who supported his pleas to get gymnastics added to the '3 R's' of reading, writing and arithmetic.**”

### THE 3 R'S

He now started canvassing parliament, firstly by himself, then via his MP. He attracted the interest of many senior, high ranking and influential people from many walks of life who supported his pleas to get gymnastics added to the '3 R's' of reading, writing and arithmetic. His exercise classes were included in the Much Wenlock School curriculum and as a result, the health of the pupils visibly improved. Neighbouring schools were impressed and added the exercises too. His pleas for them to be included nationally were listened to, accepted but he was told that the current 3 R's were sufficient, to which Brookes responded that he would gladly drop the gymnastics if they included the 3 R's of running, riding and wrestling! It seemed that other pressing government business would prevail

until William Gladstone, the Liberal Prime Minister, declared his fondness for physical exercise. In 1886, his son Herbert, also an MP, founded the National Physical Recreation Society (NPRS) and immediately invited Brookes to become a member of its Council. They worked tirelessly, especially after Brookes retirement from medical practice at the age of 80.

At last, Reginald Brabazon, the 12th Earl of Meath, as president of the NPRS and a prominent member of the House of Lords, was able to steer a bill through the upper House of Parliament in 1891 which applied pressure on the House of Commons.

They continued to campaign and eventually, in the Education Act of 1894, physical education was made compulsory in elementary schools. Brookes, now 85 years old, and after more than 40 years of campaigning was proclaimed as the 'Pioneer of Physical Activity for the Masses'.

In 1877, Brookes had requested a prize for his Games, from Greece to mark Queen Victoria's jubilee. In response, King George I of Greece sent a silver cup which was presented at the Shropshire Olympian Games held that year in Shrewsbury. In 1881, Brookes was again in contact with the Greek government, when he tried to instigate an Olympic Games in Athens open to international competitors. Sadly this attempt failed as Greece had many pressing political problems. In 1889, Baron Pierre de Coubertin (1863-1937) organised an International Congress on Physical Education in Paris, with which Brookes contributed. Subsequently Brookes invited Coubertin to the Wenlock Olympic Games the following year. He stayed several days at Dr Brookes residence and was greatly impressed by the Games.

On his return to France, Coubertin gave a glowing account of his stay in an article, "Les Jeux Olympiques à Much Wenlock", and referred to his host's efforts to revive the Olympics. He wrote: "If the Olympic Games that Modern Greece has not yet been able

to revive still survives there today, it is due, not to a Greek, but to Dr W P Brookes". The following year Coubertin sent Brookes a gold medal to be awarded to the winner of the Tilting Competition. They communicated for several years and Coubertin went on to set up the International Olympic Committee in 1894, with Dr Brookes as an honorary founding member. Coubertin went on to organise the first modern



Pierre-de-Coubertin

Birthplace of  
**Dr William Penny Brookes**  
1809 - 1895

The Wenlock Olympian Society survives today and its Games continue to be held annually in the first two weeks in July, though cancelled in 2020 due to Covid-19.

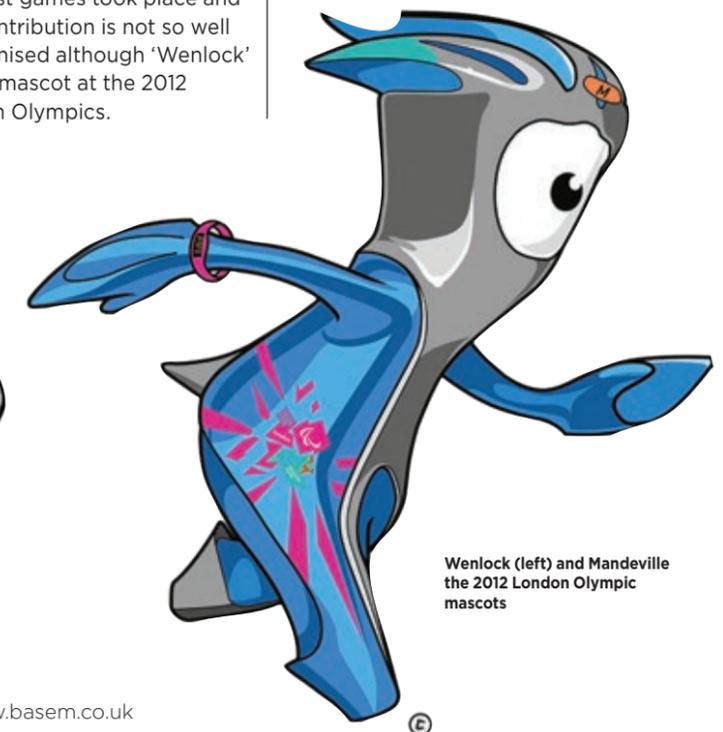
Its president is Jonathan Edwards, the triple jump world record holder.

The legacies of William Penny Brookes live on in both physical education and in the Modern Olympics Movement. His remembrance plaque at Much Wenlock states "His life was devoted to the kind and skilful practice of his noble profession, the welfare of his fellow men, the service of his borough and county, and to the promotion of PHYSICAL EDUCATION for the development of the manliness of the human race. His character was remarkable for the high resolve steadfast purpose and untiring energy with which he initiated and

carried out whatever he believed to be right and for the good of others."

His contribution to the welfare of the people of all classes surely warrants his recognition as the 'Father of British Exercise Medicine'.

Olympic Games in 1896 modelled on the Wenlock Games and was President of the IOC for the next 6 Games and it is he who is remembered as the Father of the Modern Olympics. Sadly, Brookes died 4 months before the first games took place and his contribution is not so well recognised although 'Wenlock' was a mascot at the 2012 London Olympics.



Wenlock (left) and Mandeville the 2012 London Olympic mascots

# FINANCE: A PAIN IN THE NECK

ARTICLE BY Ms HELEN HOW

**Innovative neurosurgery and Focus Shockwave intervention takes a severely compromised patient from under a life of pain and drug therapy to the road to recovery...**

When Michael Cornforth felt some pain in his neck, he reacted like most of us would. He rubbed it, put it down to the stresses of work and thought about taking a few painkillers. It would all be ok in the morning. After all, what sort of damage can you do to yourself, when you're a financial director, who spends his working day at an office screen. Nothing atypical there, and Michael isn't the sort of person who neglects his health.

He's astute enough to balance his lifestyle with regular workouts in the gym.

That though wasn't how it was working out for Michael. He'd been troubled by the growing discomfort in his neck. Of even more concern, he was losing mobility in his left hand and arm. Despite seeking professional help, he hadn't found a solution.

## PIONEERING SPECIALIST

Michael's quality of life had been crashing, he'd been sleeping only a few hours nightly, and his work performance was as compromised as his physical wellbeing. That was when he approached Helen How, the Edinburgh based osteopath and pioneering Shockwave specialist, who with a group of other osteopaths, physiotherapists, podiatrists, and doctors have regular mentoring and continual professional development with Storz Medical, Switzerland who researched and developed the equipment and techniques.

Over the years, Michael had developed a severe nerve entrapment condition. It was apparent to Helen that prolapsed disks were contributing to her patient's severe discomfort and compromised reflexes.

Helen knew she could help, but she also knew Michael would also need something more.



**Above:** As a hairstyle, it'll never catch on, but the skills of the surgical team are in evidence

While other consultants had hoped that conservative measures would suffice, Helen realised that a more radical intervention was needed. Turning to her long-standing professional associate, Mr Ioannis Fouyas, she sent Michael across Edinburgh to meet with the eminent consultant neurosurgeon. From that point on, in a rare collaboration, Helen and the surgical team worked in partnership to change Michael's life for the better.

Even for an experienced neurosurgeon, the case presented considerable difficulties. Struggling with debilitating pain and an increasing regime of drug therapy now including gabapentin, Michael was running out of options. Conductivity tests had shown that three crucial neck disks and nerves would need treatment. Specifically the C5, C6 and C7 locations, all of which carry high risk for the patient. This was going to be complicated surgery.

## PREOPERATIVE TREATMENT

Mr Fouyas liaised with top colleagues within his unit to ensure that surgery was justifiable, despite the associated risks. Michael was also aware that surgery would not provide an immediate solution, and post-operative weakness could develop, necessitating lengthy rehabilitation. Michael needed time to prepare for the complex procedure. He would need specialist help to get ready. So, in a close collaboration with Helen, Mr Fouyas referred Michael back to her for preoperative Focus Shockwave treatment similar as used in Europe such as Norway.

The neurological nature of the surgery hangs on successful healing, with as little scarring as possible. Using the specially developed Focus Shockwave system, of which Helen is the sole practitioner in Edinburgh, she worked with Michael to get his tissues into the best possible readiness for his visit to the theatre. It's the sort of preoperative treatment that cosmetic surgeons consider, in order to give their patients the best opportunities for a blemish free procedure.

Bringing together the stellar team of surgeons was only going to happen once, so the race was on to get Michael prepped for his procedure. Helen was convinced that Shockwave was the only system that would get the results fast enough to make the conjunction of time, place and patient all coincide. When Michael reached Mr Fouyas' theatre, he was as ready as he could be for the six hour marathon.

All surgery carries a risk, and neurosurgery carries as great a risk as any. Yet, much to his relief and that of the team, when Michael woke up, he had sensation in every part of his body. It's just that,



as he said at the time, it felt like he'd been kicked in the neck by a horse. His left arm felt weak and, suddenly, it dawned on him that there may be more to recovery than anyone would have liked.

That was when he learned that Mr Fouyas had made a call to his wife, to explain that Michael's rehabilitation will be lengthy. Although this could be a temporary condition, Michael might have life-changing paralysis. Scar tissue around the neck surgery might mean that the nerves may not get the opportunity to regenerate successfully, and Michael may have to deal with a pain-free life that comes with considerable cost.

## A STRICT REGIME

Over the next four weeks, Michael was placed under a strict regime of recuperation and close observation. Recovery was tough going. Crucially, he was still dependent on drug therapy and showing poor response to the partial paralysis. Mr Fouyas wasn't prepared to accept that as an outcome, and to his credit, neither was Michael.

In a further collaboration, Mr Fouyas referred Michael back to Helen for a more extensive programme of rehabilitation, based on the Shockwave therapy that had proved so effective in the pre-op stages.

Helen knew that the Shockwave



therapy that had helped Michael initially, could help get him fit after surgery too. So, over the next four weeks, Michael made visits to her clinic, for a post-operative programme, designed to stimulate healing around the neck, coupled with intensive treatment to stimulate response in Michael's upper body and arms.

Helen even referred Michael for hyperbaric stimulation to help further with nerve regeneration. Both the surgical team and Helen How were convinced that the innovative combination of Shockwave, neuromuscular stimulation, and hyperbaric treatment for the extensive muscle atrophy would be the answer.

In a delightful outcome, that's proving to be the case. Michael has been attending at Helen How's clinic for an extended programme of Shockwave therapy, and has been showing some remarkable improvements.

Critically, he's been recovering movement and use of his left hand, arm and shoulder to an almost full extent, even if the road to full recovery has a way to go yet.

Michael's C5 C6 C7 nerve dysfunction meant he has sustained some muscular atrophy. Being a responsible, active man, who doesn't take middle age lying down, he's keen to get back to gym fitness as soon as possible. Counterintuitively though, that's been something he's

been ordered to refrain from, at least for a while.

## BEST CHANCE OF A FULL RECOVERY

Nerve dysfunction does take a long time to heal. Mr Fouyas and Helen both agreed that strenuous activity carries too much risk in the short term. For would-be gym-bunny Michael, that's where Shockwave has been a post-operative boon. In the same way as cosmetic surgeons refer the system, Helen has been using her set-up to promote sub-dermal healing, so that the nerves have the best chance of a full recovery.

Eighteen months on and Michael is, by any measure, a new man. A resolute and determined patient, coupled with a gradual and closely monitored clinical programme, and the occasional recommendation towards moderation, has curbed over exertion, and put him well down the road to recovery.

The results Michael has experienced, through Mr Fouyas's surgical team and Helen How's Shockwave and rehabilitation have convinced him that the journey to recovery was possible, and he's been taking every important step, one at a time.

Now with full functionality in his cervical peripheral nerves, which have regenerated with strength and stamina for full daily life activities in both his arm and shoulder, Michael can get on with his vigorous life.

**Left:** A picture speaks volumes, but doesn't convey Michael's volume of discomfort expressed when asked to raise his forearm.

**Above:** Balanced physique is an easy visual indicator of the depth of his recovery

# STAYING ON TRACK THROUGH A PANDEMIC: A REPORT ON MEASURES TAKEN TO REDUCE RISK OF COVID IN FORMULA 1 A TEAM DOCTOR'S PERSPECTIVE...

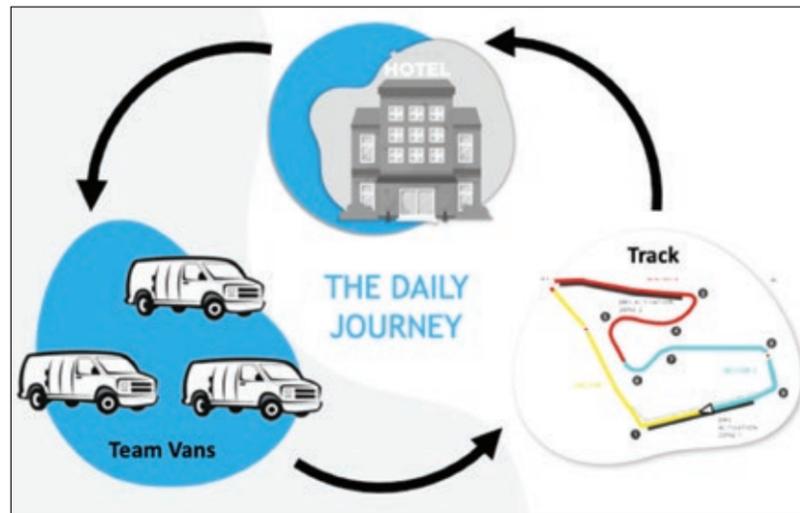
ARTICLE BY DR ALEXANDER MCFARQUHAR - FORMULA MEDICINE

Covid-19 has proven difficult to contain with numbers still rising in many places in the world. With the global pandemic set to continue into the winter, the question of how we keep a covid-free environment in Formula 1 is crucial in order to protect people's health and livelihoods, and those of their colleagues too.

After several months of lock down, The F1 season restarted in July with a European 'triple header'! But things were different. Fewer crowds, fewer press, fewer corporate personnel, and a feeling of apprehension. The glitz was on hold, but it was still time to get down to the business of racing! The covid pandemic has meant changes to the way many teams operate in the paddock this year. Measures have been put in place to curb the spread of the infection and are being rigorously implemented by the FIA this season. With small improvements being constantly made by each individual team, the sharing of best practices in a secretive environment where hundredths of a second often count, is vital.

After a positive covid case in Melbourne brought the season to an abrupt pause, July saw a tentative restart to the F1 season. Regular swab testing, face mask use and sub grouping are just some of the measures brought in by the FIA to reduce the risk from SARS-COV-2.

Lessons can be learned from several countries in their approach to stemming the spread of covid-19.



Vietnam, often held up as a 'shining light' for its low infection rates, has used a combination of symptom checks (temperature), mass masking, regular testing, isolation, contact tracing and lock downs (1). F1 has shared many of the problems experienced in other countries in terms of outbreaks and spread of the virus. In fact, the movement of the teams across borders and through multiple countries together with consistent travel within enclosed environments,

makes Formula 1 a high risk sport for spread of the virus. Here we examine how the virus may enter the paddock, and measures taken to limit its spread.

### A TYPICAL DAY IN FORMULA 1

A typical day in formula 1 involves travel from the hotel to the track in groups, followed by a day's work at the track and then travel back to the team hotel in the evening.

This is the routine from Tuesday until Sunday's race.

PLACES CORONA COULD BURST INTO THE BUBBLE:

- Contact surfaces in hotel room
- Hotel personnel at breakfast/dinner
- Contact with personnel at track entrance
- Contact with other team's members within the paddock

Places where Covid-19 could enter the F1 bubble

Below, we focus on measures to prevent the virus entering, and measures to limit the spread of the virus.

### Measures to prevent the virus getting into F1 bubble

- Face masks at all times (FFP3 / N95 provide greatest protection). Changed daily
- 3-5 daily swab testing with results sent to teams in order to isolate positive tests at hotel rather than track to reduce transmission
- Alcohol gel after breakfast on getting into van
- Cleaning of steering wheel
- Temp check on entering the van
- Travel with windows open (and no air con) to maximize ventilation with van
- Clean change of clothes daily to reduce transmissions on fomites

### Measures to prevent the virus entering the paddock:

#### Temperature checks

Temperature checks are carried out daily on entry to the paddock area. One of several measures brought in to pick up symptoms and reduce the chances of contamination and transmission of the virus. The surface temp checks are carried out with an infrared thermometer pointed towards the forehead.

#### Regular Swabs testing

One of the main measures brought in by the FIA in a bid to screen for covid cases is swab testing. With a mandatory requirement of swab testing every 5 days, some teams have further stretched their screening program to 3 daily in a bid to pick up any asymptomatic cases earlier.

The tests use PCR analysis of material from the upper respiratory tract to screen for covid antigens and this is particularly useful in the early detection of covid-19 in asymptomatic patients. This screening method, far from ideal, is one of the only measures that can be used to identify coronavirus and reduce the chance of its entry and spread through the paddock. This means that as a procedure, it is likely to continue for the year.

Whilst the procedure has its clear upsides, the down sides are now starting to become more apparent. Swab testing is an invasive procedure with NHS guidelines suggesting nasopharyngeal testing should be used in combination with oropharyngeal testing (2) for the most accurate result. This method, however, can have a significant impact on people's work. The dread and disruption to daily work is clear. In several cases, nasopharyngeal testing is so uncomfortable that oropharyngeal testing is the only appropriate alternative. Whilst some studies suggest oropharyngeal testing is an inferior method of testing (3), other studies (4) have suggested the superiority of oropharyngeal swabs for certain virus detection e.g. adenovirus and 2009 H1N1. In the same study (4) oropharyngeal testing was deemed inferior (vs nasopharyngeal swabbing) in the detection of influenza B and parainfluenza virus. For this reason, a combination of NP and OP swabbing is considered the only safe option.

Owing to the need for compliance with continued testing, urgent further research in the area will be required in order to understand if OP swabs can produce as reliable a result as NP swab testing, in the context of covid-19. A large research study (including detection of positive cases using NP Vs OP methods) will reliably guide swab testing methodology and allow optimisation of comfort whilst not compromising reliability of testing in a world where progress and efficiency is key.

#### Hand washing

It is proposed by Jayaweera et al (6), that there are 3 modes of transmission of covid-19. Droplets transmitted on 'fomites' (clothes, utensils, furniture), aerosol/ air borne droplets, and self-inoculation (of the nasal mucosa by contaminated hands). ☺

Regular hand washing using tried and tested methods <sup>(7)</sup> is crucial in reducing the chances of the virus particles initially breaking into the F1 bubble. Hand washing is also necessary to protect the individual from spreading the virus particles from fomites to their own mucosal surfaces (mouth and eyes). Together with hand washing, 24 hourly washing of clothes will be essential to reduce the potential for picking up and transmitting virus particles.

#### Face masks

There is a multitude of guidance on the use of facemasks. Currently, WHO recommends masks to limit the transmission of SARS-CoV-2 <sup>(8)</sup>. In the context of aerosol generating procedures (ENT examinations, intubation, CPR), masks including N95, FFP2 or FFP3 are suggested. In all other cases, medical masks are recommended by the WHO, as they have 95 % droplet filtration.<sup>(9)</sup> The FIA has suggested a medical face mask of the level: EN14683:2019+AC:2019 as a minimum requirement for use <sup>(9)</sup>.

Further research into mask use <sup>(6)</sup> shows that FFP3 or N95 masks are best at limiting the spread of infection. Their routine use, whilst not crucial according to the world health organisation (if a medical mask is available), is best in order to reduce infection rates in enclosed environments like those seen in transport vans, airplanes and garages throughout the paddock. It must be noted that any mask containing material coverings introduces the concept of mask maintenance. Fabric must be cleaned 24 hourly and wet or soiled masks should be cleaned/changed immediately.

#### Measures to limit the spread of infection:

##### Travel to and from the track

Another potential place where covid 19 virus particles may be spread is during travel to and from the track. After research conducted by Jayaweera et al <sup>(6)</sup> into ventilation in confined spaces (cars, airplanes and health care settings), it seems that keeping ventilation as high as possible in these environments is best in order to reduce the risk of transmission and remove virus particles from enclosed environments. Since ventilation within airplanes is an uncontrollable, ventilation in cars can be more heavily focussed on. Better ventilation is achieved by keeping the windows open and the air conditioning/ fan off. This reduces transmission <sup>(6)</sup>. Jayaweera et al <sup>(6)</sup> do also mention that there may be a better chance of virus droplets being spread more in temperate climates in E.Asia, Europe and N.America (humidity <50%, temp <25, ACH>60) than in tropical climates like SE Asia, Africa and S.America where humidity and temperature are higher. This concept is important in calculating the risk of virus spread during travel to each individual host country.

##### Early identification of positive case

As previously mentioned, swab testing is at the heart of early detection of covid-19. If a positive sample is received, information is relayed to the teams so that the individual in question does not leave the team hotel in the morning, limiting their contact with others, and risk of spreading infection. This event will trigger immediate

isolation and re-testing, as well as early identification of contacts. Vigilance from medical personnel for common symptoms (fever, cough, shortness of breath, fatigue, headache, rhinitis, sore throat, anosmia, ageusia, skin rash, peripheral cyanosis) is also key in the process of early testing and isolation of potential cases.

#### Suspected cases

It is clear that the aforementioned symptoms are wide ranging and therefore an efficient, robust process is required in order to rapidly test (or retest) patients with symptoms or inconclusive test results. This reduces their risk of transmission by immediate isolation and limits isolation time, returning individuals to work asap, in the event of a negative repeat swab test.

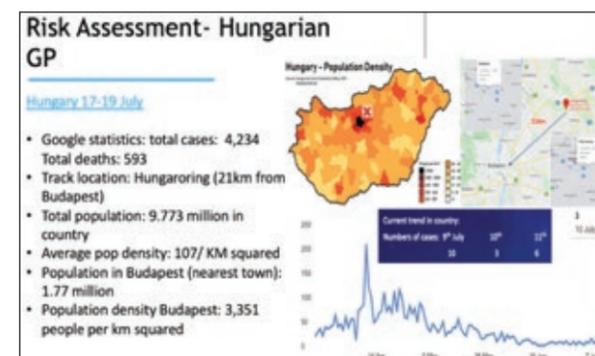
Having seen this method tested at several times during the season, the process of isolation and re-testing is pivotal to reducing risk of transmission with any suspected case or positive test result. Any suspected cases should be managed with full PPE (medical mask, gown, gloves, eye protection) with an escalation to N95 or FFP3 in order to limit the spread of infection.

#### Isolation

As formula 1 teams move through countries, local guidelines take precedent over FIA code of conduct. In Austria, local guidelines allowed for teams to leave their hotels and enter their local environments to eat, drink and exercise. In Hungary, a 'lock down' meant that teams were unable to leave their 'bubble'(the vicinity of the hotel) except to travel to and from the track in subgroups. These local variations appear to reflect each country's capacity for risk, with the risk of F1 to the country deemed greater than the risk of the country to F1. This appears to be somewhat accurate for some of the European races where covid-19 numbers within the country are particularly low. As the season has progressed to Grand Prix in the more 'high risk' countries (those where covid-19 is more prevalent), careful vigilance has been paid to current corona virus cases in that country, population densities and proximity of team residents to in-country outbreaks.

#### Risk assessments

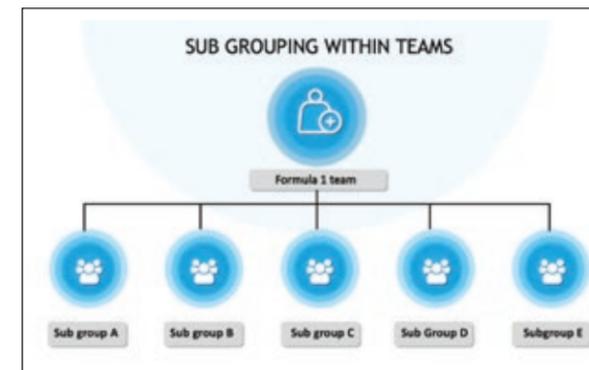
Risk assessments of countries hosting F1 events can investigate population densities, location of in-country outbreaks of the virus, current corona virus trends and location of tracks in relation to highly populated areas:



Reference: WHO daily coronavirus cases- <https://covid19.who.int/region/euro/country/hu>

#### Sub grouping

Sub grouping is a crucial part of limiting the spread of any virus outbreak in F1.



A team's ability to manage a positive case has been pivotal this season. With accurate subgrouping, it is possible to segregate groups in the event of any outbreak and thus limit spread. This allows for isolation of small groups during which time, repeat testing can be carried out to check for viral spread and confirm negative swabs and therefore fitness to work.

#### Early contact tracing

Early contact tracing has been essential in order to reduce the risk of transmission in the event of symptoms or a positive swab test. It is hoped that sub groups will form the majority of close contacts. Mask use and social distancing ensures that individuals travelling to and from the track together are the most likely to be spending >15minutes in close proximity to one another, thus being recorded as 'close contacts'.

#### Social distancing

Of crucial importance in disrupting the spread of infection is two meter social distancing. The FIA has produced guidelines to suggest that a 2m gap should be maintained at all times. This is difficult given the work pressures within the garages and where safety could be compromised by maintaining this gap.

In this case, masks are recommended to curb the spread of infection. Outside of the track (team hotels), a 2 meter distance should be maintained at all times (particularly between members of different teams and different subgroups).

As Formula 1 continues to navigate through the stormy seas of a global pandemic, adherence to the above guidelines is crucial in order to prevent the virus penetrating the F1 bubble. With several positive test results this season, the speedy and effective identification and isolation of affected individuals is a credit to the processes put in place to manage the pandemic, reducing the impact of coronavirus on the sport and the Formula 1 community.

It remains to be seen what further impact coronavirus will have on this (and next) season's Formula 1 calendar. But with subgrouping, swab testing, social distancing, contact tracing, risk assessments, early isolation, early detection measures, screening for early symptoms and facemask use, we can see the implementation of robust measures to battle the virus and keep the race season on track.

#### References:

1. Vietnam's response to COVID-19: prompt and proactive actions. Dinh et al
2. <https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/guidance-and-sop-covid-19-virus-testing-in-nhs-laboratories-v1.pdf>
3. <https://www.cebm.net/covid-19/comparative-accuracy-of-oropharyngeal-and-nasopharyngeal-swabs-for-diagnosis-of-covid-19/>
4. Comparison of Nasopharyngeal and Oropharyngeal Swabs for the Diagnosis of Eight Respiratory Viruses by Real-Time Reverse Transcription-PCR Assays. Kim et al
5. Advice on the use of masks in the context of COVID-19. WHO. June 2020
6. Transmission of COVID-19 virus by droplets and aerosols: A critical review on the unresolved dichotomy. Jayaweera et al
7. [https://www.who.int/gpsc/clean\\_hands\\_protection/en/](https://www.who.int/gpsc/clean_hands_protection/en/)
8. Mitigation plan for 2020 Austrian grand prix. Return to motor sport in the context of the covid-19 Pandemic
9. FIA code of conduct

# DO YOU WANT TO ENHANCE YOUR MSK SKILLS?

ARTICLE BY DR MARTYN SPEIGHT FFSEM

Are You feeling frustrated/limited in your skill set, when faced with a complex MSK case load?

Are you weary of seeing another MRI scan of a low back pain patient that does not offer any clear structural explanations? Have you thought of post graduate training in Osteopathic/Manual neuromusculoskeletal Medicine at the London College of Osteopathic Medicine?

If some of the above sounds familiar to you, spend a little longer to reflect on what you can do to enhance your skill set for managing MSK cases. With the relatively recent introduction of “Experts in musculoskeletal medicine”, into the SEM title, this may well be the case for the structuralist/pathoanatomical reductionist approach to patient care. But what about dysfunction of the neuromusculoskeletal system?

Do you feel equipped to recognise, diagnose and manage such a disorder? Whichever practitioner in an MDT setting is managing these cases, it behoves all team players to have an understanding of the key diagnostic feature, to ensure that the most appropriate management is implemented. Whether you work in an NHS MSK clinic, elite sports team/club setting, or in your own independent private practice, a clear and detailed understanding of neuromusculoskeletal medicine, is a key foundation to optimal management of MSK cases.

## UNDERLYING CONCEPTS

MSK medicine has emerged from a background of orthopaedic medicine, manual medicine and osteopathic manipulative medicine. The distinctive and underlying concepts of MSK medicine are: a) the scientific basis of

the neuromusculoskeletal system and b) the functional (pathophysiological) and structural (pathomorphological) basis of dysfunction of the neuromusculoskeletal system. Pathophysiological disturbances are classified using the accepted international term “somatic (or segmental when applied to the spine) dysfunction.” The recognition, diagnosis and management of these reversible dysfunctional states, manifest clinically as reduced joint mobility, tight muscles, disturbances of the autonomic nervous system and abnormal neurodynamics, differentiate the discipline of MSK medicine from rheumatology and orthopaedic surgery. (Hutson M, Fundamentals of MSK medicine, Oxford textbook of MSK medicine, 2nd ed, 2016, with permission).

So what could you do to enhance your skills? You could consider sitting in a clinic with a medical practitioner who is trained in neuromusculoskeletal manual diagnostic / treatment skills to gain insights into their work, as well as attending modular courses on such skills (these are widely available on the web). A more clearly structured/systematic approach, would be to attend the 18 month part-time osteopathic medicine course at the London college of Osteopathic Medicine.

The college is unique in the world,

offering post graduate osteopathic medicine training to qualified medical practitioners. It has its foundations in American medical osteopaths from 1911, entitled British osteopathic association, later establishing the osteopathic association clinic in Westminster in 1927, then moving to its current location in Boston place (which at the time had a connection to Dorset square). After world war two In 1945, the second generation of American medical osteopaths founded the London college of Osteopathic medicine, with a charter of holistically treating soldiers injured in the war.

Osteopathy in the UK is regulated like Medicine and Dentistry. The LCOM course operates part time over 84 weeks. The course is delivered as 4 modules: 1) Foundations of osteopathic medicine, a distance learning section, over 12 weeks, requiring 3 hours learning per week. 2) Introduction to clinical osteopathy, an intensive block of two 6 day periods of clinical work at the LCOM. 3) & 4) Two Clinical apprenticeship periods, each covering a period of 39 weeks, attending Fridays and Saturdays at the LCOM. Total number of hours are: Contact (non-clinical) 384, Contact (clinical) 780, Non-Contact: 360. TOTAL: 1524 hours. Further information/course fees etc, is available at [lcom.org.uk/studywithus](http://lcom.org.uk/studywithus)

To give some useful insights into the experience of a Sports and Exercise Medicine doctor who has recently (completion 2019) trained at the LCOM and just two months ago, was appointed as Consultant in Sports & Musculoskeletal Medicine at the London Hospital for integrated medicine, I asked **Dr Matteo Bernardotto** the following questions:

### 1) At what stage in your postgraduate training did you decide to do the LCOM training and why?

Half way through my SEM training I felt my



MSK skills needed to broaden. I was growing frustrated by the over-reliance of on diagnostic imaging at the expense of clinical skills. I was also impressed by the ability of many physiotherapists and osteopaths to provide “hands on” treatment to athletes to complement their structured rehabilitation programme. I therefore felt that manual medicine should be an essential skill set for all SEM physicians and I explored how to attain such training. My search led me to find LCOM, which provides the world’s only osteopathic course specifically for medical doctors. After a discussion with the course director, I knew it would be a good professional investment. ➔



Excellence in postgraduate osteopathic training for doctors since 1937

## DO YOU WANT TO BROADEN YOUR PRACTICE WITH ENHANCED MSK SKILLS?

Gain more practical skills and the ability to diagnose & treat MSK conditions in our 18-month medical osteopathy course



### Central London

LCOM is located in Marylebone London & our clinical course runs 2 days a week (on Fridays & Saturdays) over 18 months.



### Small Groups

Teaching is via small group and interactive learning with highly trained & experienced faculty.



### Professional Recognition

LCOM is approved to teach osteopathy by GOSC & has Recognised Qualification RQ status.

## What our graduates say:

*“My skills in diagnosing & managing MSK conditions has improved immeasurably as a result of the LCOM course. I now have an understanding & a skillset which allows me to treat these conditions directly & successfully in NHS general practice.”*

*“I realised it would add a valuable dimension to my work as a sport & musculoskeletal (MSK) doctor, particularly the ability to better assess MSK problems and provide manual treatment during consultations.”*

For more information, contact course director Tracy Davies [t.davies@lcom.org.uk](mailto:t.davies@lcom.org.uk) and visit our website [www.lcom.org.uk](http://www.lcom.org.uk)

**2) Do you feel that the LCOM training fulfilled your training needs and expectations?**

The 18-month training was intense but rewarding. The small group tutorials, 1-to-1 supervision and the large volume of patients seen in the teaching clinic proved to be an excellent platform to nurture my MSK diagnostic and treatment skills. I felt my clinical assessments were more functional and holistic, complementing well the biomechanical model typically used in SEM. Over time my manual dexterity, or "manual literacy", improved dramatically, allowing me to deliver osteopathic manipulations safely and effectively. Once I completed the exit exams, I was also able to register with the General Osteopathic Council and practice these new skills independently and to a high standard as a recognised professional.



Dr Matteo Bernardotto

**3) What would you say was the most useful part of your overall experience at the LCOM and what impact has this had on your day to day clinical work?**

A pivotal learning from the LCOM course was the ability to perform a more comprehensive and detailed MSK assessment for patients. This strengthened my diagnostic acumen and allowed me to embrace a truly integrative and holistic approach, addressing all the different factors underpinning a patient's condition more effectively. From a treatment perspective it has been refreshing to provide focused and effective point-of-care manual treatment to patients during consultations, complementing well standard SEM interventions such as exercise prescription and rehabilitation advice. This has greatly benefited the therapeutic relationship with my patients, who have generally shown better understanding of their condition, engagement with rehabilitation, treatment satisfaction and clinical outcomes.

**4) What opportunities have you had as a result of doing the LCOM course?**

Completing the LCOM course opened many opportunities. I developed a strong interest in back pain, and I was able to take up a position in the MSK and manual medicine department at the Royal London Hospital for Integrated Medicine (RLHIM). I am now not only more confident in managing a challenging group of patients with complex and chronic MSK pain, but I also enjoy it more. This was a great platform to continue practicing my osteopathic skills and help develop a new SEM consultant post in the NHS. In addition, I have been involved with the European Scientific Society of Manual Medicine (ESSOMM), to establish an Europe-wide training framework in manual medicine and help it become a recognised subspeciality.

In fact, whereas manual medicine or physiatry is already a recognised speciality in many western countries, the UK does not yet have a recognised training pathway for doctors.

“Looking back at my training at LCOM, what stands out is the dedication of the clinical tutors, who provided support and guidance throughout the programme.”

**5) Do you have any advice for an SEM doctor who wants to expand on their MSK assessment and treatment skills?**

I would strongly recommend the LCOM course to any SEM doctor that wants to expand their MSK expertise. The combination of osteopathic and SEM principles is a strong synergy to improve clinical examinations and diagnosis.

In addition, the ability to deliver hands on treatments such as manipulations makes clinical practice more interesting and satisfying, for both the doctor and the patient. Osteopathy or manual medicine is sometimes unfairly seen as complementary medicine, despite being supported by a large body of evidence, studies and clinical guidelines.

However, my experience of learning these skills has been thoroughly positive, and I would heartily recommend it to those with the intellectual curiosity to look at the whole spectrum of opportunities within SEM and MSK medicine.

**6) Any other comments about your LCOM experience?**

Looking back at my training at LCOM, what stands out is the dedication of the clinical tutors, who provided support and guidance throughout the programme.

I am also very thankful to the school directors, who allowed me the flexibility to continue the course without impacting my SEM training rotations. I have developed good friendships with the students I trained with and I continue to feel part of the school with their regular post-graduate masterclasses and CPD activities.

Thanks to Matteo for the above insight. I would just like to expand on the reference in part 4 above, to the ESSOMM, who in September 2018 issued the following; European core curriculum "manual Medicine" methodological recommendations and contents for the european postgraduate training and qualification for the additional competence manual medicine for european specialists.

(<http://doi.org/10.1007/s00337-018-0453-y>).

Anyone wishing to discuss any of the above, please contact me at the details below;

Dr Martyn Speight, MSK/Sports Physician, Osteopath.  
The Wharfedale Clinic, Barden House,  
50-52 Park Road, Guiseley Leeds, LS20 8AN.  
[www.thewharfedaleclinic.co.uk](http://www.thewharfedaleclinic.co.uk)  
[martynspeight@me.com](mailto:martynspeight@me.com)  
01943 850950  
07947367302

# MSK CASE HISTORY AND QUIZ

ARTICLE BY DR JOHN TANNER MSK AND SEM PHYSICIAN

## I would like to describe 3 cases of shoulder pain and dysfunction...



Image 1: T2 weighted MRI oblique R shoulder

### CASE 1

A 42-year-old man who was a squash player competing at club level presented with the complaint of weakness on back hand strokes and mild discomfort in the shoulder region. It had become progressively worse over the previous few months.

Examination revealed wasting of the infrascapular muscle mass, a full passive range of motion of the glenohumeral joint, full active elevation of the shoulder in the scapular plane with no painful arc, and normal power on resisted isometric abduction with arm by his side but weak on resisted isometric external rotation. Other isometric tests showed full power.

An MRI was arranged (Image 1, above) which revealed the cause and he was referred to a shoulder surgeon.

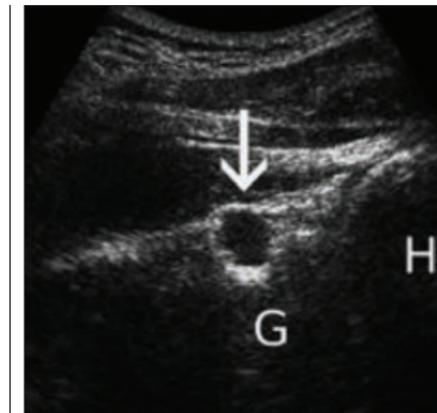


Image 2: Ultrasound posterior shoulder

### CASE 2

A 19-year-old tennis player presented with persistent pain in his right shoulder on overhead actions such as serving and smashes. He had had physiotherapy focussed on strengthening his rotator cuff, improving thoracic rotation and posture and scapular positioning, which had not helped. Examination indicated some posterior shoulder discomfort at full active elevation, absent painful arc, full range of passive glenohumeral movement and full power on isometric testing. An ultrasound scan (image 2, above) was performed showing a normal rotator cuff but an unexpected finding in the posterior region which led to MRI investigation. A subsequent sonographically guided procedure performed in the clinic resulted in resolution of his symptoms.



Image 3: Ultrasound of the posterior shoulder

### CASE 3

A 69-year-old male golfer presented with moderate discomfort in the right deltoid region during the windup and follow through phases of the swing. He could manage a full round and the symptoms tended to fade within a few hours. He had intermittent pain during dependent arm swing when walking. Examination revealed discomfort towards the end of passive range of both rotations and glenohumeral abduction and some loss of power only external rotation, absent impingement signs, and positive O'Brien's test in the thumbs up position. An Ultrasound scan showed the cause close to the spinoglenoid notch (image 3, above), and a simple image guided procedure resolved his symptoms.

## QUESTIONS:

- 1) What is most likely diagnosis common to all three cases?
- 2) Describe the types of pathology associated with this abnormality and their usual locations.
- 3) Name the nerves that can be involved and their muscle innervation.
- 4) Describe the image guided procedure performed in an outpatient setting.
- 5) What is the risk of recurrence following the US guided procedure unless the underlying pathology is addressed.

Please send yours answers to Nicky Birkinshaw - [nicky.birkinshaw@basem.co.uk](mailto:nicky.birkinshaw@basem.co.uk)

The winner will receive a £50 Amazon voucher from BASEM