Guilsborough Academy
Sixth Form

PE Super Curriculum – Physiological Effects on Performance

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Articles

Performance Enhancing Drugs (Ergogenic Aids)

Bicarbonate and Ketone's Effect on Performance
https://pubmed.ncbi.nlm.nih.gov/32735112/

The Ketone study showing how ketone ingestion increased EPO levels
https://journals.physiology.org/doi/abs/10.1152/ajpendo.00264.2022

Running Shoes (Biomechanics)
Article on Nike Running Shoes
https://www.theguardian.com/sport/2023/apr/22/brands-try-to-get-a-step-ahead-in-battle-of-super-shoes

Injuries
Study on Injuries in Adolescent Athletes
https://onlinelibrary.wiley.com/doi/abs/10.1111/sms.13635

Study Describing Different Injuries With Age in Elite Adolescent Footballers
https://bjsm.bmj.com/content/55/14/794.abstract

Research Study on if Rugby Scrum caps can reduce concussion risk
https://pubmed.ncbi.nlm.nih.gov/33607666/

The Importance of 'Durability' in the Physiological Profiling of Endurance Athletes
https://pubmed.ncbi.nlm.nih.gov/33886100/

How muscle soreness and sleep quantity affect injury risk
https://journals.humankinetics.com/view/journals/ijspp/17/9/article-p1399.xml

Transgender in Sport (Physiology of)

Swimming England announcing Transgender Policy
https://www.theguardian.com/sport/2023/apr/03/swim-england-announces-transgender-policy-with-open-and-female-categories

World Athletics' policy on trans and DSD athletes:
Trans
https://www.worldathletics.org/download/download?filename=f911778e-5bfa-4d49-b044-9920fc743216.pdf&urlslug=C3.5A%20–%20Eligibility%20Regulations%20Transgender%20Athletes%20–%20effective%2031%20March%202023
DSD
https://www.worldathletics.org/download/download?filename=f911778e-5bfa-4d49-b044-9920fc743216.pdf&urlslug=C3.5A%20–%20Eligibility%20Regulations%20Transgender%20Athletes%20–%20effective%2031%20March%202023

Football (Physiology and Psychology of)

Why stars miss more penalties
https://twelveyards.substack.com/p/mbappe-culture-and-the-superstar

Football version of International Journal of Sports Physiology and Performance
https://journals.humankinetics.com/view/journals/ijspp/17/9/ijspp.17.issue-9.xml?rskey=U0Zy5b&result=1

Physiological Demands of Football
https://www.gssiweb.org/sports-science-exchange/article/sse-125-physiological-demands-of-football

Respiratory

Breathing Chemistry and Carbon Dioxide
https://www.researchgate.net/publication/242546547_Better_Chemistry_Through_Breathing_The_Story_of_Carbon_Dioxide_and_How_It_Can_Go_Wrong

An article on the incidence of asthma in elite Swedish Athletes:
https://www.tandfonline.com/doi/full/10.1080/02770903.2020.1728769#:~:text=In%20the%20present%20study%2C%20the,%2Dyears

Fitness Loss (Reversibility)

Houmard et al 1990 - a study on runners where keeping the intensity of training the same allowed for certain performances to be defended even though volume was cut down significantly: https://pubmed.ncbi.nlm.nih.gov/2318562/

Madsen et al 1993 - another runner study, this one showing how high intensity training defends high intensity physiology, but the fat oxidation and endurance capacity drops off significantly: https://journals.physiology.org/doi/abs/10.1152/jappl.1993.75.4.1444

Henwood et al 2008 - one of the two strength training studies we discuss, where detraining and then retraining is able to return strength to pre-detraining levels within about half the time it took to lose it: https://pubmed.ncbi.nlm.nih.gov/18693231/

Blocquiaux et al 2020 - the other strength study, which also found a drop in strength that could be regained in about half the time it took to lose it: https://pubmed.ncbi.nlm.nih.gov/32017951/

Kramer et al 2017 - an amazing study where people were given bed rest for 60 days, and various physiological measures were assessed before and after. This study found that even 3 min of hopping six days a week cut these changes enormously: https://www.nature.com/articles/s41598-017-13659-8

Chi et al 1983 - this is the study we discuss where 6 to 12 weeks off causes the oxidative enzymes to drop significantly, but they still remain well above the levels of never-trained people: https://pubmed.ncbi.nlm.nih.gov/6829750/

Maldonado-Martin 2017 - this is the study on elite cyclists who stopped for the 4 week off season, and VO2max, RBC, Skinfolds and peak power were among the variables measured: https://pubmed.ncbi.nlm.nih.gov/27476326/

Garcia-Palleres 2009 - the kayaking study, where some elite kayakers stopped training entirely, others did about 20% to 30% of their normal training and cut their losses in half: https://pubmed.ncbi.nlm.nih.gov/19997013/

COVID and Exercise

Inflammatory heart disease in professional athletes with COVID-19 infections - this is the study on 789 USA pro sports athletes: https://jamanetwork.com/journals/jamacardiology/fullarticle/2777308

Cardiac involvement in young athletes with COVID - this is the study in college aged athletes in the USA: https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.121.054824

Ben Jones' studies on transmission of COVID19 in rugby league: https://bjsm.bmj.com/content/early/2021/02/10/bjsports-2020-103714

COVID-19 vaccines and sudden deaths: Separating fact from fiction
https://yourlocalepidemiologist.substack.com/p/covid-19-vaccines-and-sudden-deaths

The study that measured how long it took for heart rate, daily activity and sleep to return to normal after Covid-19 infection by using people's fitbit data
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2781687?resultClick=3

Training Methods and Adaptations

Occlusion Training:
2020 Review on Occlusion training, a systematic review: https://journals.sagepub.com/doi/abs/10.1177/0363546520964454?journalCode=ajsb

Early (2009) review on occlusion training: https://journals.lww.com/nsca-scj/fulltext/2009/06000/the_use_of_occlusion_training_to_produce_muscle.11.aspx#:~:text=LOW%2DINTENSITY%20OCCLUSION%20

Potential safety issues with blood flow restriction: https://pubmed.ncbi.nlm.nih.gov/21410544/

Review on the mechanisms for improvement with blood flow restriction: https://pubmed.ncbi.nlm.nih.gov/25249278/

No evidence to adapt training to the phase of the menstrual cycle
https://www.mysportscience.com/post/no-evidence-to-adapt-training-to-the-phase-of-the-menstrual-cycle

Impact of prior accumulated work and intensity on power output in elite/international level road cyclists—a pilot study
https://link.springer.com/article/10.1007/s12662-022-00818-x

Finnish study showing that low and high intensity training improve endurance, at least in less well trained individuals
https://www.frontiersin.org/articles/10.3389/fphys.2023.1128111/full

Mathieu van der Poel on altitude and his TDF struggles (cyclist)
https://www.stickybottle.com/latest-news/van-der-poel-suspects-altitude-training-to-blame-for-tour-slump/

The study of world class distance runners' training
https://sportsmedicine-open.springeropen.com/track/pdf/10.1186/s40798-022-00438-7.pdf

The four-part series by Marco on HRV, explaining what it is, how to measure it, and a lot of case studies:
Part 1: https://medium.com/@marco_alt/the-ultimate-guide-to-heart-rate-variability-hrv-part-1-70a0a392fff4
Part 2: https://medium.com/@marco_alt/the-ultimate-guide-to-heart-rate-variability-hrv-part-2-323a38213fbc

Part 3: https://medium.com/@marco_alt/the-ultimate-guide-to-heart-rate-variability-hrv-part-3-5fe902f3d2b3
Part 4: https://medium.com/@marco_alt/the-ultimate-guide-to-heart-rate-variability-hrv-part-4-909b52f71131

Studying finding no relationship between Fat Free Mass and Shot put performance
https://www.researchgate.net/publication/46403565_Body_Composition_and_Performance_in_Shot_Put_Athletes_at_Preseason_and_at_Competition

Four second power output and performance improvements study
https://journals.lww.com/acsm-msse/Fulltext/2021/12000/Four_Second_Power_Cycling_Training_Increases.9.aspx

Effects of Temperature on Performance

One example of research that studies the cold-shock response and how regular cold water immersion reduces the intensity of the response
https://pubmed.ncbi.nlm.nih.gov/9721005/

The article showing how training easy in the heat increases haemoglobin mass, even in elite cyclists
https://physoc.onlinelibrary.wiley.com/doi/full/10.1113/EP088544?campaign=wolacceptedarticle

British runner survives a body temp of 18.8C
https://www.itv.com/news/border/2022-06-24/man-found-clinically-dead-saved-after-leaving-blood-trails-in-snow

Podcasts

Explaining Sex vs Gender in sport
https://podcasts.apple.com/gb/podcast/caster-semenya-explaining-sex-vs-gender-in-sport/id1461719225?i=1000437011090

The Drugs in Sport Episode
https://podcasts.apple.com/gb/podcast/the-drugs-in-sport-episode/id1461719225?i=1000444046730

How To Make a Champion
https://podcasts.apple.com/gb/podcast/how-to-make-a-champion-part-i/id1461719225?i=1000446817014

How To Cheat and Get Away With It
https://podcasts.apple.com/gb/podcast/how-to-cheat-at-sport-and-get-away-with-it/id1461719225?i=1000449136593

The Shoe That Broke Running
https://podcasts.apple.com/gb/podcast/the-shoe-that-broke-running/id1461719225?i=1000454638981

The Shoe That Broke Running Pt2
https://podcasts.apple.com/gb/podcast/the-shoe-that-broke-running-ii-the-end-of-integrity/id1461719225?i=1000465030427

The Science of Perfect Training
https://podcasts.apple.com/gb/podcast/the-science-of-perfect-training/id1461719225?i=1000466807200

Why Everything You Know About Recovery Might Not Be True
https://podcasts.apple.com/gb/podcast/why-everything-you-know-about-recovery-may-be-bs/id1461719225?i=1000468825781

The Remarkable Effects of Exercise On Ageing
https://podcasts.apple.com/gb/podcast/the-remarkable-effects-of-exercise-on-ageing/id1461719225?i=1000474410138

Watt the FTP (Functional Threshold Power)
https://podcasts.apple.com/gb/podcast/watt-the-ftp/id1461719225?i=1000484055767

The Simple Truth About Exercise And Hydration
https://podcasts.apple.com/gb/podcast/the-simple-truth-about-exercise-and-hydration/id1461719225?i=1000488440355

The Science Of Motivation/Does BMI Really Matter?/ How Exercise Affects Body Temp
https://podcasts.apple.com/gb/podcast/s3-e1-the-science-of-motivation-does-bmi-really/id1461719225?i=1000506064845

The Science of Sleep
https://podcasts.apple.com/gb/podcast/the-amazing-science-of-sleep/id1461719225?i=1000511418547

The Psychology of Food
https://podcasts.apple.com/gb/podcast/the-psychology-of-food/id1461719225?i=1000521340059

Why Transgender Athletes Threaten Fairness in Women's Sport
https://podcasts.apple.com/gb/podcast/s3-e8-why-transgender-athletes-threaten-fairness-in/id1461719225?i=1000522515770

The Meaning of Fitness
https://podcasts.apple.com/gb/podcast/s3-e10-the-meaning-of-fitness-from-definition/id1461719225?i=1000525456825

The Science of Gymnastics
https://podcasts.apple.com/gb/podcast/s3-e16-olympic-special-the-science-of-gymnastics/id1461719225?i=1000530056569

The Science of Sprinting
https://podcasts.apple.com/gb/podcast/s3-e17-olympic-special-the-science-of-sprinting/id1461719225?i=1000530401021

The Science of Climbing
https://podcasts.apple.com/gb/podcast/s3-e18-olympic-special-the-science-of-climbing/id1461719225?i=1000530642168

The Science of Nutrition in Sport
https://podcasts.apple.com/gb/podcast/s3-e19-the-science-of-nutrition-in-sport/id1461719225?i=1000534677784

The Effects of Heat on Exercise
https://podcasts.apple.com/gb/podcast/the-effects-of-heat-on-exercise/id1461719225?i=1000548970288

The Science of Endurance
https://podcasts.apple.com/gb/podcast/the-science-of-endurance/id1461719225?i=1000549697809

The Science of Endurance: Fuel and Hydration
https://podcasts.apple.com/gb/podcast/the-science-of-endurance-fuel-hydration/id1461719225?i=1000551178940

How Cold Affects Exercise
https://podcasts.apple.com/gb/podcast/how-cold-affects-exercise/id1461719225?i=1000567489259

Unpacking the Truth Behind Exercise and Protein Supplementation
https://podcasts.apple.com/gb/podcast/unpacking-the-truth-behind-exercise-and/id1461719225?i=1000582303104

The Concussion Debate: Can Playing Contact Sports Cause Brain Damage
https://podcasts.apple.com/gb/podcast/the-concussion-debate-can-playing-contact-sports/id1461719225?i=1000586995150

The Sporting Heart
https://podcasts.apple.com/gb/podcast/the-sporting-heart/id1461719225?i=1000597538217

The Science of Fatigue
https://podcasts.apple.com/gb/podcast/the-science-of-fatigue/id1461719225?i=1000607690391

Fatigue Resistance and How to Improve it
https://podcasts.apple.com/gb/podcast/fatigue-resistance-and-how-to-improve-it/id1461719225?i=1000609501405

Documentaries

Icarus (Netflix) – Oscar winning Documentary on doping

Gamechangers (YouTube) – Documentary on Diet and Nutrition with a focus on Vegan's in Sport

MOOCs

The Science Behind Anti-Doping
https://www.futurelearn.com/courses/the-science-behind-anti-doping

Sustaining Your Endurance Training
https://www.futurelearn.com/courses/sustaining-your-endurance-training

Introduction to Sport, Health, and Rehabilitation Sciences at University
https://www.futurelearn.com/courses/introduction-to-sport-health-and-exercise-sciences-at-university

Sports Performance: The Mind, Body, and Coaching
https://www.futurelearn.com/experttracks/sports-performance-mind-body-coaching

Sports Performance: Training the Body for Sport
https://www.futurelearn.com/courses/sports-performance-training-the-body-for-sport

Strength & Conditioning for the Endurance Athlete
https://www.futurelearn.com/experttracks/strength-and-conditioning-for-the-endurance-athlete

Become a Nutritionist
https://www.futurelearn.com/career-advice/become-a-nutritionist

Physiology
https://www.futurelearn.com/subjects/healthcare-medicine-courses/physiology