Academy of PHYSICAL MEDICINE

Broadcast Summary

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Nutritional Considerations on Musculoskeletal Medicine

With Matt Wallden

About Matt Wallden

- Trained as an Osteopath and Naturopath in the 1990's
- Trained in the CHEK System between 2001-2005
- Worked in professional sports 2003
- Associate Editor of the Journal of Bodywork and Movement Therapies Rehabilitation Section
- Presented internationally to various medical groups

Author of Rehabilitation chapter in Naturopathic Physical Medicine (Chaitow L, Churchill Livingstone; 1st edition, 2008)

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Naturopathic triad

- Represents the three important components of people's health, namely: a] Biomechanical side (incl physical therapy); b] Biochemical side (incl nutrition and pharmacology); and c] Psychological-emotional side. Health challenges result when there is an imbalance to any one or more of these areas.

- Evidence-based rather than common sense-based is the prevailing approach to medical practice these days. Evidence (i.e. research findings) is needed so that practitioners will be able to work better with people that are in pain and with persistent health condition.

- 'Holism' is one of the most debased terms these days, being seized on by every individual dealing with other people. The term 'holism' is spelt with an "h" not with "w" because it does not actually allude to 'whole' person, rather it has to do with the body being a whole-

composed of atoms, which form molecules, which form proteins and so on all the way up making each of them a whole on its own sense.

Paul Chek

- Founder of CHEK (Corrective Holistic Exercise Kinesiology) Institute. Specialist in sports injuries among others.

- Fast oxidizers should eat more meat, slow oxidizers should eat less. In general, avoid soya which is very allergenic, is a goitrogenic compound, and is genetically modified in most cases. (Traditionally held thoughts: soya is a wonder food and meat is bad for the body).

- Cited references that tied in evolutionary concepts and how people ate through their evolutionary times. Noted that peoples' biochemistry differs based on where they are in the world and where their ancestors are from.

    - Inhabitants nearer the equator have an abundance of carbohydrate rich foods year round and are therefore tolerant of carbohydrates.

    - Inhabitants of the more temperate zones and the polar zones have a scarce carbohydrate resource particularly during winter time.

    - An anatomical dissection would show differences between the digestive tracts of equatorial peoples and Inuit.

- The CHEK System teaches people to follow the 80:20 rule – 80% of the time healthy foods and 20% indulge. This helps avoid orthorexia (an eating disorder where people have an obsession with 'rigid-clean eating' which can spiral out of control into more detrimental behaviours).

Biochemical individuality

- Biochemically, human physiology will have adapted to its environment, particularly after a long period.

- People do not eat now as their ancestors (evolutionary change). For example, Inuits are probably well adapted to eating meats, carbohydrates being less readily available. Seaweed from the stomachs of the seals, was their only source of carbohydrate during the winter months. Adrenal glands of the seals and the fish are their main sources of Vitamin C.

Structure of the gut

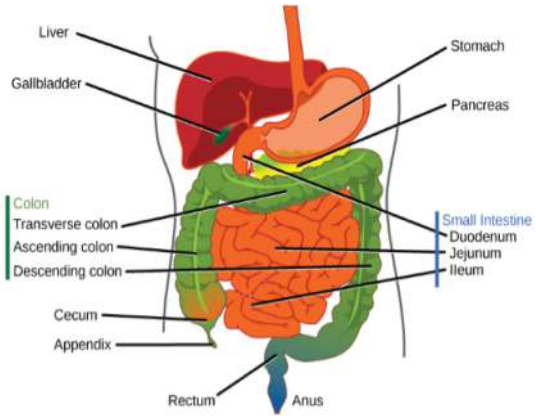
- Herbivores have a very developed cecum which is particularly associated with plant digestion. Hind gut fermenters like rabbits and horses which do not have multiple stomach, digest food in the cecum.

- Full gut fermenters (i.e. ruminants) like cows and sheep have the capacity to digest plant matter in the fore gut.

- Human cecum is extremely small compared to herbivores.

- Success with veganism/vegetarianism has to do with both genetic and individual state of the gut. The microbiome or gut bacteria digest certain foods for the body, allow the body to access the vitamins and minerals within the food, and produce vitamins themselves.

- Absorption of certain vitamins depends on the balance of gut bacteria in individuals. For example after undergoing an antibiotic treatment due to an infection or surgery, individuals may no longer be able to absorb the same food substance as before.



- The actual structure of the gut changes.
- The small intestine varies by as much as about 60% - 15 feet for small intestine in some people up to as long as 40 feet in other people.
- Equatorial people have longer guts compared to those from the poles (this is completely congruent with what thinkers understand of carnivores).
- The colon in humans in particular is much shorter than other primates.

Metabolic typing

- Metabolic typing has do with the rate at which the cells in the body oxidize (i.e. cellular metabolism). It is about looking at the balance in the autonomic nervous system, balance in the cellular oxidation system, and which foods would help to cater those balances or imbalances.

- It attempts to teach individuals to have a better awareness of what their body needs and how their body is responding to different foods.

- People have distinctive metabolisms have a corresponding nutritional profile. A key part of nutrition is to understand how it affects the individual.

- A fast oxidizer can be perfectly fuelled by meat (eg Alaskan Inuit have increased cellular oxidation rates to deal with the cold). Adaptation to oxidation rate can be done both within the individuals in terms of the environment they are in but also across generations.

- Slow oxidizers can handle veganism or vegetarianism better, because accessing protein and fats is very difficult with plant matter.

- Fat soluble vitamins/saturated fats and cholesterol are associated mostly with animal produce.

- "The Metabolic Typing Diet" (William L. Wolcott) argues that people are biomechanically and metabolically different: they process the same foods and nutrients differently due to their widely varying hereditary influences hence the need for them to match their nutrition with their respective metabolism.

- Consistently eating the wrong kinds of food is like a repetitive strain injury to one's hormonal system which across time will create a macro trauma to it.

- Depending on genetics and the microbiome, typically the higher the carbohydrate levels, the higher the rise in the blood sugar. When the latter rises, the body releases insulin to bring it back down. However, if the sugar level drops below the functional physiological range, the body tends to release cortisol to bring it back up again.

Cortisol

- Cortisol is a catabolic hormone and is antagonistic to melatonin (sleep hormone) which is the most potent antioxidant in the human body. If the body is inhibiting melatonin, there will be a potential problem to one's health and repair system.

- Light stimulates cortisol production which mobilises glycogen into glucose and stored fats into free fatty acids. This spike in cortisol first thing in the morning is what wakes a person up and gives the energy needed to get up.

- Cortisol also shuts down the digestive system. Therefore physiology dictates that the body is not ready to eat immediately on waking – breakfast (in the traditional sense) may not be the most important meal of the day!

- Pain patients get dampened cortisol spike in the morning, as fatigue impairs cortisol production.

Assessment questionnaire for metabolic typing

- A metabolic typing system developed by Bill Wolcott comprised a detailed set of questions is available online for a fee. It helps determine whether the patient is fast oxidizer, slow oxidizer, parasympathetic dominant, or sympathetic dominant.

- While there are free questionnaires that can give a rough idea of a person's metabolic type, it is recommended to use the more structured and detailed questionnaire which gives a significant report to explain a person's physiology - how it is likely to respond to different food groups and is used as basis for recommending a meal plan.

- Parasympathetics ("rest and digest" type) tend to do better on higher protein meals because they are heavily into digestion while sympathetics ("fight/flight" type) tend to do better on carbohydrates.

- In general, those with white skin are likely to be from an area that did not have very many carbohydrates available. Those with darker skin probably have had exposure to greater levels of carbohydrates through their ancestral line. However, metabolic type is not just genetic.

- Oxidation rates change. It can be slowed in the heat hot so people do not feel like having a big, heavy protein-rich meal.

- Nutritional requirements are influenced by factors like the environment, general stress that the body is under, menstrual cycles, etc. (eg an athlete would have a different nutritional requirement to a non-athlete).

Blood type diet

- 'Eat Right For Your Type' (D'Adamo PJ) outlines blood-type diet, and is backed by sound science. Its claims about lectins are valid – that there are different types of lectins and that all foods have lectins in them which react with different blood types.

- Eating a kidney bean without soaking it first could potentially kill or make an individual ill. Soaking the bean breaks down the lectins, turns it into a healthy food and can be safely absorbed.

- Blood typing is a part of metabolic typing system (fine tuning what a person should or should not eat).

- 'O' blood types tend to do better with meats while 'A' blood types tend to do better with grains.

Structure of human teeth

- It has been held that the human teeth differentiate them as being not carnivores, but herbivores do not have canines.

- Arguably, humans were not meant to eat meat - canines in humans are relatively small.

- Convergent evolutionary evidence correlated with human brain development suggests that humans evolved not to need canines to tear flesh etc.

- Early hominids with more developed canines may be attributed to their lineage.

Saturated fats and cholesterols

- The human body consists of 100-trillion cells. 50% of a cell wall is made up of saturated fats. New sources absorbed from saturated fats or cholesterol in food are therefore useful.

- As with water: the body is able to recycle water to some extent, but is it better to be a stagnant pool or a flowing river?

- The body can produce 85% of the cholesterol it needs endogenously but it needs to get 15% from diet. Cholesterol can only be derived from animal sources.

- Cholesterol is the precursor to pregnenolone which is the metabolic intermediate in the biosynthesis of most of the steroid hormones including testosterone, estrogen, cortisol and basically the glucocorticoids.

- The body will always start to prioritise certain hormones over others when there is a relative shortage – and when this happens it will start to impair blood sugar regulation, fluid regulation, sex drive etc.

- Blaming cholesterol for heart disease is like blaming the fire brigade for causing fire. Heart disease is the body's response to the inflammation within the arteries which is caused by various things including Advanced Glycation End products (AGEs) which is a result of typically too much sugar and free radicals in the diet.

HDLs and LDLs

- High Density Lipoproteins (HDLs) are the cholesterol molecules that ship out cholesterol to the tissues. They deal with the damage to the arteries where there is inflammation.

- Low Density Lipoproteins (LDLs) ship the inflammatory mediators and byproducts back to the liver. They are a marker of how much inflammation there is in the system.

- Cholesterol is not to be blamed for any problem in the body system. It is a marker.

- Many factors affect cholesterol – stress is one of them.

- "The Great Cholesterol Con" (Kendrick, M) is a worthy read.

Sugar

- Sugar is known as a displacement food. Foods containing healthy compounds (eg apple or bananas) have been displaced by foods rich in sugar and calories (eg Mars bars).

- Diabetes has gone up almost in direct relation to the rise in sugar consumption.

- Natural killer cells (i.e. responsible for preventing cancer) have impaired function for up to 8 hours after consumption of just one teaspoon white sugar.

- Yeast overgrowths due to too much sugar can impact on immune function, brain function, emotional health, and general gut health. Can also cause bloating and potentially affect musculoskeletal function.

Alcohol

- There is no health justification for drinking alcohol. The proanthocyanidins (antioxidants) present in red wine can also be derived from eating grapes and grape seeds.

- Since red wine is a social thing, drinking it feeds both the biochemical aspect and psycho-emotional aspect in the naturopathic triad.

- Drinking red wine with a meal slows its absorption. Well hydrated people with healthy blood sugar levels put minimal stress on their system when they consume wine with a meal.

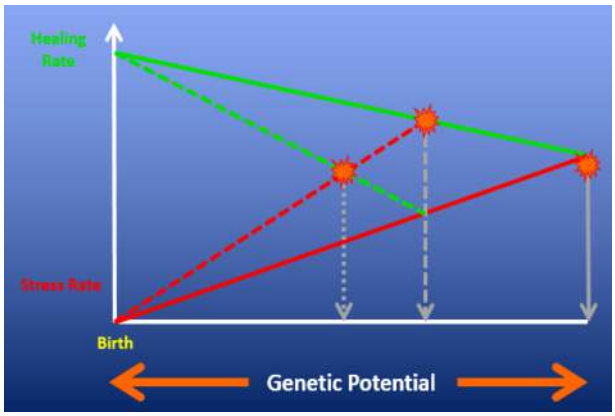
Genetic modification

- People in general do not know yet the ultimate impact of genetic modification on the environment. One of the dangers with GMOs is tampering with little things and disrupting the whole ecosystem.

- It is still not understood whether the gut receptors recognise the molecules that are genetically modified and how they affect everyone's microbiome. The latter is responsible for all kinds of functions in the body – from gut health to mental health, including the serotonin production, among others.

- One of the common side effects of dysbiosis is bloating. The latter is not entirely

Cumulative Microstress Model
(Wallden 2003)



- The figure above illustrates that across time, people accumulate load on the system (E.g. just by sitting in a gravitational field, loads come down to the system creating micro trauma which becomes macro trauma upon accumulation over time).

- Living organisms would not repair from macro trauma.

- Osteopaths and chiropractors tend to work a lot with micro trauma and with the stress system (i.e. biomechanical stresses and forces) – the aim is to lower the cumulative stress on the body by optimising the following: posture, function, and load sharing between joints.

- To be able to repair optimally, people's biomechanics should be improved, their loading or dysfunctional loading decreased, and their healing should be increased. This is where nutrition comes in.

- Food should not be seen as merely calories and how much energy it can bring into the system. It should rather be seen as a major material source for repair i.e. produce quality red blood cells (120 million RBCs per second) and that making them out of organic farm fresh food is a completely different level of quality than making them out of fast food.

attributed to gas but also to inhibition of the trans abdominis and the tonic motor neurons that surround the midriff.

- If people then eat genetically modified soya and go down to the gym, they are essentially/potentially training with naked spine.

- Advocates of GMO who claim that it is the only way forward have not really looked into the welfare of the animals who have been modified to produce meat and milk and how the latter impact on the human health in general.

Organic food

- Contamination is everywhere. Xenoestrogens coming from industrial products and plastics get into the rivers which form precipitation that then penetrates the fields.

- One can never avoid contamination completely but one can minimise the toxic load on the system by eating organic foods or locally farmed foods.

- Organic stamp is very expensive to acquire (only big farmers can afford it) and running an organic farm is very expensive in general. Local farmers often have standards equal to or above organic standards.

Protein

- From a metabolic typing point of view, if people do well with protein (i.e. fast oxidizer), then the following can be optimised: immune function, sleep function, and other mechanisms that will help them to repair.

- People with effective and functional digestive system should be able to do well and get enough protein from just a standard diet.

Assessing patients

- Screen the different organ and glandular systems
- See where the likely problems are whether it is more in the stomach or the small/large intestines –whether there is an inflammation
- Assess whether there is a lot of stress in the adrenal system and whether or not that could be affecting digestion –being in a fight/flight state shuts down digestion.
- Check the immune system – between 70-80% of the immune system lines the digestive tract because it is the part where people absorb something foreign (or not tolerable like lactose or gluten) into the body.

- Protein shakes often have branch chain amino acids which are more absorbable post workout; gym users therefore start the repair process earlier. They are also beneficial to people with certain medical conditions that warrant higher protein intake or with digestive compromise (i.e. cannot digest proteins the normal way).

- Whey protein is classified as toxic substance in transit, but is permissible in sports drinks. Like soya and isoflavins, whey protein is common in protein shakes and many people are highly allergic or intolerant to them.

Other nutritional considerations

Aloe vera	• Helps soothe and reduce inflammation in the gut and is often used for people with irritable bowel syndrome and inflammatory bowel disease.
Atkins, Pritikin, Paleo diets	• Labelled diets that employ 'one size fits all' approach. • Nutritional requirements vary per individual – digestive tracts, microbiomes, genetics, stressors and temperature are different. • Changing diets make people feel better for a period of time because they changed the stress on their system, they become more aware of the foods they eat - using different enzyme systems and different part of the digestive system.
Bromelaine and papaine	• Bromelaine is derived from pineapples while papaine is from papaya. • Both are proteolytic enzymes that help to break down tissue debris when there is trauma. • They work like macrophages.
Collagen	• Collagen supplements are recommended for tendon injuries. Several anecdotal reports on their benefits are published. • Collagen is much reduced in people's diets today compared to 100 years ago.
Dairy	• Primarily a mucagenic food. • Between 40-70% do not have good tolerance to it as an adult. • Caucasians are typically well developed to tolerate dairy and continue to make lactase into adulthood compared to different ethnic group. • People with gluten intolerance are most likely to develop lactose intolerance
Exercise	• Helps return sensitivity to insulin and leptin (the hormone produced when satiated) • Having an established balance between rest and exercise or eating and fasting facilitates better digestion, optimises breathing mechanics, helps a person make right food choices, etc.
Fasting	• Challenging to abstain from food in this day and age because people are always surrounded by food and attracted to it all the time. • Eating frequently in small amounts is very good for avoiding migraines. This strategy can be a good fix but temporary.

	• Getting a balance of micronutrients within each meal can sustain a person's energy levels. • Abstaining from food in between meals (without snacks) is a useful form of fasting.
	• Breakfast means to break the fast – it could be mid-morning or midday. • Ideally, people should get up, move, and then eat. Sports nutrition talks about the importance of eating very quickly after finishing a workout. • Animals eat straight away after hunting because that is when all the enzymes are optimised to bring the nutrition on board, after the activity.
	Benefits of fasting • Minimises exposure to insulin (people tend to become overexposed to insulin stimulating foods, making them insulin insensitive which leads to prediabetes) • Sensitivity to leptin returns (people with morbid obesity are generally very leptin insensitive)
Food intolerances and sensitivities	The most common food sensitivities - • The most common food sensitivities are – - Rice and soya in the east - Dairy and gluten in the west - Corn and gluten in the US • There are certain foods that have a level of allergenicity which makes people more prone to react to them.
Glucosamine and chondroitin	• A lot of research suggests that glucosamine and chondroitin can help patients with tendon or joint injuries, but not all cases. • Around 50-60% of people typically get some kind of benefit
Gluten intolerance	• Causes inflammation in the digestive system and therefore sensitise the immune system – means that it depletes people from an energetic perspective because they tend to fight an infection caused by gluten that is always a part of their diet. • Creates inhibition over the tonic motor neurons that actually stabilise the core/spine. • Damages the microvilli which produce lactase to break down the lactose • Patients with this condition have joint aches and low back pain
Green-lipped mussel	• Beneficial to cartilage-based rehabilitation and connective tissue rehabilitation

Macronutrients	• Optimises blood sugar regulation, hormonal production, and immune function, among others.
MEERING	• Acronym for – movement, excretion, expiration, reproduction, irritability, nutrition, and growth • This is essentially the list that defines a living organism
Mucus production	• Mucus is a generic response to an invader that is why people produce it when they have a cold. It is one way that the body pushes invaders out mechanically. • Ear wax and diarrhoea are examples of the body's generic response to an invader.
Nutrition	• Can have significant effect but it has to be tailored to the individual circumstances. • It is significant to be keen, to keep testing and retesting, and to really work on the individual's awareness of the nutrition that works best for them.
Supplementation	• Getting the diet right works better than taking supplementation. • Proper diet is about giving the body the right tools to rehabilitate itself. • Dietary supplements are quite pharmaceutical in the way they work. • Supplementation for the inflammation in the gut should be properly researched –look at what pharmacological are being used and whether there is any kind of cross reactions.
Turmeric and ginger	• Beneficial for joint problems. • In cooking, they break down protein in meat. • They have to be taken alone in order for them to act on the body.

Repair system of the human body

- The DNA of plants and humans is similar in terms of systems and genetic codes. For example, the red blood cell is just one atom (or element) different to chlorophyll but both have exactly the same shape and arrangement. Both are also light sensitive.

- The phytochromes within the red blood cells are responsive to lights (similar to the chlorophyll) and they bring in Vitamin D.

- Human have two very potent antioxidants: a) melatonin which is released during sleep and b) anticarcinogenic compounds that if one gets enough light and enough dark they can be very health providing.

- Between about 10 pm and 2 am, when asleep, the physical repair takes place. Between about 2 am and 6 am psychogenic repair occurs. If one repeatedly misses either one of those, then it is like a repetitive strain injury to their repair mechanism – which across a period of time will end up with micro stressors becoming a macro stress.

- Light is what stimulates the energy producing process in the earliest life forms – they use photosynthesis to generate energy. Photosynthesis is a form of 'inspiration and expiration' which in humans are part of their repair mechanism that helps with driving their fluid, balancing their autonomic state, etc.

Breathing system

- Breathing pattern disorders mimic a lot of symptoms: neck pain, back pain, heart pain, headache, dizziness, coordination issues, gut issues, bloating, etc.

On being a vegetarian (Wallden's experience)

Being a vegetarian	• The decision was from a health perspective, not really from a philosophical perspective. • Main driver was the health principles taught in school – meats are toxic, fats are dangerous and unhealthy, thrive on high carb-low fat diet, etc. • Diet encompassed - whole foods, whole cereals, organically grown vegetables and fruits
Personal results	• Increasing ill-health • Struggling to stay awake - a classic sign of blood sugar dysregulation in postprandial lethargy. • Cold sores – developing at the slightest hint of stress.