

Myths and Misconceptions in Orthopedics

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ABSTRACT

Myths are the ideas which many people commonly believe but are false with respect to the available scientific evidence of that time. In every popular medical culture, there are beliefs and practices that do not have scientific evidence but are still used widely. Most of them may be harmless, but with time, they have a propensity to get recognized as a “fact” and thereby obscure the real facts. Myths do their work at the emotional level and can, therefore, be more powerful than logic with which it is juxtaposed. Just like any other branch of medicine, orthopedics too has its share of misconceptions. This article aims to create awareness about these myths using a few examples and to critically evaluate even the most ingrained and widespread practices, which are based on tradition and the assertive weight of authority but lack the scientific backing of available evidence.

Key words: Misconceptions, myths, orthopedics

INTRODUCTION

Myths and misconceptions are as old as human understanding. Before the advent of any form of medicine, they provided working hypotheses to establish a cause-effect relationship in man’s earliest attempts at healing. As knowledge and understanding of human body increased, many of these myths could not stand the test of evidence and were, therefore, rejected. Some of these concepts that are still prevalent in popular culture, regardless of the lack of evidence to prove them, are regarded as “myths” or “misconceptions” by the proponents of modern evidence-based medicine. Here are few of the common misconceptions, which are prevalent not only among the common people but surprisingly also among few clinicians.

MYTH: “IF YOU CAN WALK ON IT, IT IS NOT BROKEN”

There is a tendency to assume that if a person who has injured his lower extremity and can stand up and walk on his/her own, he/she does not have any fracture or any major structural injury.

However, it should be known that fractures of non-weight-bearing bones of the lower extremity such as fibula, patella, phalanges, the malleoli, and tibial eminences and some avulsion fractures, usually do allow walking with minimum discomfort. Ligament tears, dislocation of small joints, muscle tears, etc., are also compatible with ambulation.^[1] Hence, when there is significant trauma, a thorough clinicoradiological examination should be done to rule out a major injury.

MYTH: “CRACKING OF KNUCKLES CAUSES ARTHRITIS”

It is traditionally said that cracking of knuckles, particularly by children, causes early joint pains, swelling, and stiffness of joints and arthritis.

The cracking/popping sound is a normal phenomenon and is thought to be caused when the gases

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dissolved in the synovial fluid rapidly come out of it under pressure, and the joint capsule stretches a little further. It is a harmless action and in joints that are otherwise normal, there is no evidence to associate this with causation of any form of arthritis or any other pathology.^[2,3]

MYTH: “BAREFOOT IS THE BEST WAY TO WALK”

Walking barefooted was traditionally encouraged in many ancient forms of healings and throughout various cultures. Renewed interest has been developed after a few studies showed it to promote increased muscle strength and proprioceptive sensibility through a better activation of foot and ankle musculature.

Increased muscle strength may be due to the action of walking *per se*, and there is no evidence yet to prove its advantages over “footwear walking.” On the contrary, barefoot walking definitely makes the person more prone to various injuries, hookworm infestations, plantar warts, and various fungal infections.^[4-7] Rather, it is advisable to support the medial plantar arch with appropriate footwear for those involved in prolonged standing, running, and sportsmen, to prevent inflammatory and painful conditions of foot, for example, plantar fasciitis, metatarsalgia, etc.^[8] Minimalistic footwear with appropriate support can be a method of reaping the suggested benefits of barefoot walking while still providing a protective surface.^[9]

MYTH: “RUNNING IS BAD FOR THE KNEES”

It is been loosely said that runners have a predisposition for osteoarthritis of the knee.

Osteoarthritis is a degenerative condition and is so common that postulating a role of running in its etiology will need long duration comparative studies. Prolonged running may cause conditions like iliotibial band syndrome and patellofemoral pain syndrome (Runner’s knee), but they are of temporary nature and are preventable.

At present, there is no evidence to link it as a cause of osteoarthritis.^[10]

With proper preconditioning and appropriate “preparation,” running is a very simple and effective exercise in fit persons. Regular runners have a 25–40% lower risk of premature mortality and live about 3 years longer than non-runners.^[10]

To avoid knee pain, it is advisable avoid hard surfaces, strengthening the leg and core muscles,

avoidance of hills, and proper running footwear. When starting at later ages, it may be advisable to get evaluated by an orthopedic surgeon to rule out pre-existing knee or other joint conditions.

MYTH: “SOUR FOODS/DAIRY PRODUCTS AGGRAVATE ARTHRITIS”

Proponents of traditional remedies advise against the consumption of sour substances and dairy products in the presence of arthritis.

Any food or drink that enters the body gets neutralized on entering the stomach. The pathogenesis of most of the arthritis is well understood now, and it nowhere suggests that such foods influence the course of the above disease. Some people may have intolerance or allergy to certain foods, which may cause immunological upheavals resulting in aggravation of symptoms. This is often misconceived as a direct association between a particular food product and the symptoms resulting from it. In fact, the Vitamin C found in citrus foods is required to make collagen, a necessary component of bones and other tissues, and may actually help in getting relief from arthritis. Similarly, milk is a rich source of calcium, and milk products that of proteins, which are usually deficient in the patients suffering from arthritis. Hence, these patients should be advised to take a proper intake of the above products. Although vitamin/micronutrient data are limited, there is a plausible role for these nutrients in preventing/slowing osteoarthritis.^[11]

MYTH: “SIT UP STRAIGHT TO AVOID BACK PROBLEMS”

There is a natural tendency to slouch while sitting, particularly at the workplace. This posture causes stress on the intervertebral discs, ligaments and eventually leads to pain and deformities. Hence, it is conventionally advised to sit erect. However, biomechanical research done to study various sitting positions using magnetic resonance imaging showed that sitting in an upright position for a long time also causes strain on the back. It has shown that a “body-thigh angle” of 135° is the best sitting position biomechanically. It causes less muscle activity and fatigue of the back muscles and eventually reduced susceptibility for back discomfort and spinal problems.^[12]

Practically speaking, reclining at 135° can be difficult for any productive work and there is a tendency to slide off the seat.^[13] The North American Ergonomic

Standard Associations have found that the biggest reductions in muscle activity are found in chairs that have a reclining backrest between 110 and 130°.^[14]

MYTH: “FRACTURE HEALING CAN BE EXPEDITED BY SOME DRUGS”

Fracture healing in adults is a gradual process that takes 6–12 weeks to heal.^[1] There has always been a tendency among clinicians to attempt to expedite this process using various modalities – for example, drugs, supplements, diet modifications, etc.^[15,16]

Commonly given advices are as follows:

- To increase the caloric intake.
- Increase protein intake.
- Use of anti-inflammatories.
- Bioflavonoids and flavonols such as quercetin and proanthocyanidins, omega-3 fatty acids.
- Increased mineral intake – calcium, phosphorus, magnesium, silicon, zinc, etc.
- Vitamins such as – Vitamin D, Vitamin C, Vitamin K, and Vitamin B6.
- Eating programs, for example, Alkaline for Life®.
- Hormones – growth hormones and growth factors such as IGF (insulin-like growth factor), calcitonin, fish oil.
- Bisphosphonates like – alendronates.
- Antioxidants.
- Traditional/herbal products – *Arnica*, *European comfrey* (*Symphytum*), *Horsetail grass*, *Indian herb Cissus quadrangularis* (*Hadjod*), *Traditional Chinese herbal medicine*, and *Calcarea phosphorica*.
- Electromagnetic waves therapy – bone stimulators.^[15]

A poor general health and drugs impairing inflammatory response reduce the rate of healing. Deficient intake of proteins, minerals, and vitamins do lead to osteoporosis and subsequent fractures, but there is no convincing evidence yet that any of the above-mentioned “treatment modalities” play any role in “early healing” of fractures or in improving the quality of union.

MYTH: “NEVER WEAR HIGH HEELS”

High heels carry the stigma of being bad for the foot and comfort. There is also a tendency among clinicians to attribute all lower limb chronic ailments to them, regardless of the direct evidence to suggest the same. Studies have shown that their constant and prolonged use over many years have negative effects on spine, hips, knees, ankles, and feet.^[17-19] It may compromise

muscle efficiency in walking and increase the risk of strain injuries.^[20]

Some recent, more advanced biomechanical studies done in South Korea suggest that wearing high heels actually strengthen the ankle muscles at first (1–3 years), but prolonged use (about 4 years) of high heels eventually causes a muscular imbalance.^[21,22]

Hence, a better advice might be to use heels <3 inches and vary the heel height as much as possible: For example, high heels 1 day, flat heels on the next. Since the feet vary in their neutral positions and ranges of motion, the safe height of heels also varies from person to person.

MYTHS: “CALCIUM IS SUFFICIENT TO TREAT OSTEOPOROSIS”

Osteoporosis is a progressive and systemic disease which affects >10 million people in India every year, majority being women. Supplementation with calcium (and Vitamin D) has been an essential baseline therapy for osteoporosis prevention and treatment.^[23]

Recent research has shown that merely calcium and Vitamin D are insufficient in effectively treating diagnosed cases of osteoporosis. Various new agents have been developed in the past decade, some of which have already become the mainstay for treatment, while some are currently undergoing clinical trial for the Food and Drug Administration approval.

Some of them are as follows:^[23,24]

1. Bisphosphonates: Risedronate, alendronate, zoledronic acid, and ibandronate – Antiresorptive agents.
2. Denosumab: Antireceptor activator of nuclear factor-kappa B ligand antibody.
3. Teriparatide: Recombinant protein form of parathyroid hormone [PTH].
4. Strontium compound: A bone selective calcium-sensing receptor agonist or “calcimimetic.”
5. Lasofoxifene: A new selective estrogen receptor modulator or estrogen agonist-antagonist.
6. Odanacatib and balicatib: Inhibitors of the resorptive enzyme cathepsin K.
7. Abaloparatide: A PTH-related protein analog.
8. Ostabolin-C: A new cyclicized PTH analog.
9. Romosozumab: Humanized monoclonal antibody that targets sclerostin.

CONCLUSION

Although the examples given above are only the tip of the iceberg, one must wonder what other “facts” have

been taken for granted that just are not so. The society still looks upon us doctors as the source of authentic medical knowledge, regardless of the easily available vast information on the internet. It is the responsibility of every clinician to first recognize the prevalent misconceptions of their specialty, for what they are, and critically challenge these false assumptions. Most importantly, clinicians also should have the courage to abandon them.

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