

Tuning Forks and Fractures

How to use a tuning fork to determine if there is a broken bone or fracture.

When tuning forks are struck lightly, they begin to vibrate. When these vibrations are placed near a break in a bone, the person's pain increases. If the vibrations don't increase the person's pain, it's a lot less likely he has suffered a bone fracture.

Larry Nordhoff tells how to use a tuning fork to diagnose a rib fracture at the scene of a car accident. In addition to evaluating the person for other signs of fracture,

Nordhoff writes: "Place the vibrating tuning fork in a non painful site 3 to 4 inches away from the localized area having pain, and ask the patient whether he or she feels an increase in pain at the painful site or at the tip of the tuning fork." (from Motor Vehicle Collision Injuries).

If the patient finds the vibrations from the tuning fork cause increased pain, then it is more likely that the patient has a bone fracture. In that case, further diagnosis clearly is warranted.

No one diagnostic tool is foolproof every time (not even an x-ray). So, it remains important to evaluate the whole situation in deciding on what level of care is appropriate.

<http://www.youtube.com/watch?v=0H508oXgoUk>

<http://www.youtube.com/watch?v=yTo6Hv0fp9s>

One small study found that the tuning fork test had a sensitivity of 75 percent, a specificity of 67 percent, a positive predictive value of 77 percent, and a negative predictive value of 63% for tibial stress fractures.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2681212/>

Use of tuning fork in diagnostic auscultation of fractures

This study was conducted on 50 patients in the Central Institute of Orthopaedics, Safdarjung Hospital, New Delhi, from June to October 1985.

With the help of a child's stethoscope and a tuning fork of 128 Hz, the sound conducted by an injured limb was compared with that by the uninjured limb. The presence of a fracture reduced or abolished the conduction of sound by a bone.

This method allows a quick examination without causing any pain, which is an advantage in an uncooperative patient. It is also reliable in the unconscious. The test is so simple that paramedical staff can use it. The results were correct in 94 per cent of patients and were confirmed by radiological examination whereas clinical diagnosis was correct in only 88 per cent of cases.

<http://www.sciencedirect.com/science/article/pii/0020138387903913>

Clinical Use of Tuning Forks to Identify Running-Related Stress

Published in Athletic Training and Sports Health Care January/February 2009 -
Volume 1 · Issue 1: 12-18

This study examined the sensitivity and specificity of 3 tuning forks to detect stress fractures in trained runners. Radiographs, bone scans, and magnetic resonance images were obtained from 45 runners presenting with symptoms of stress fractures. Tuning forks of 3 frequencies (128, 256, 512 Hz) were used.

Pain was assessed using a scale of 0 (no pain) to 3 (severe pain). Sensitivity and specificity for detecting stress fractures were determined. Higher fork-induced pain ratings were correlated with any positive imaging finding.

The 256-Hz fork elicited the highest pain ratings and sensitivity for detecting a stress fracture (range, 77.7%–92.3%), and the 512-Hz fork elicited the lowest (range, 50%–76.9%) for all diagnostic tests.

Tuning fork-induced pain rating is associated with a positive image finding. A pain rating of 3 is highly predictive of the presence of stress fracture. A 256-Hz tuning fork induced the highest pain ratings and may be the most useful diagnostic frequency.

<http://www.healio.com/orthopedics/journals/atshc/%7B9f70f435-3033-4e12-b71d-b765357faa94%7D/clinical-use-of-tuning-forks-to-identify-running-related-stress-fractures-a-pilot-study>

Adjustment of a Sacro-iliac subluxation with tuning forks by Alain Dhers

“On the first visit of a patient in acute stage of subluxation, I apply the following protocol to facilitate the adjustment and get it more efficient.”

“Once localized the subluxation, in the present case a left PI ilium subluxation, I draw a line on the patient's skin to visualize the border between the subluxated iliac bone and the sacrum at the level of the sacro-iliac articulation.”

“Then I activate 2 tuning forks, one with a 128 Hz frequency and fixed weights, the other one with a 258 Hz frequency and fixed weights. To activate them, I grab each tuning fork at its base without touching the U part and I knock one against the other at the level of the weights.”

“I apply one on the iliac bone, on the left side of the line I drew, and the other on the sacrum on the right side of the line. I stay until the vibration ceases and I repeat the operation three or four times.”

“That allows the subluxated articulation to go from mobility 0 to mobility 0.001. This is the result of creating a vibration on the ilium with one frequency and a vibration on the sacro with a different frequency.”

http://www.youtube.com/watch?v=KOUD6J_EOmk

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The tuning fork is a cost-effective addition to clinical examination.

A 1997 study using the tuning fork for tibial fracture diagnosis stated that the tuning fork test (TFT) is not sensitive enough to rule out a stress fracture on the basis of a negative test.

A 2005 article concluded, that although it should not be regarded as definitive, a simple tuning fork may assist in diagnosing leg pain in the athlete

A 2006 study in 'Emergency Medicine' also concludes that the tuning fork may be a useful addition to clinical practice.

A well known website aimed at providing a practical resource for General Practitioners also recommends the use of a tuning fork, again with the proviso that a negative test should not be regarded as indicative of the absence of a fracture.

In addition a large scale NHS research project is about to start, indicating a resurgence in interest in the technique.

Obviously more research is still needed. However, when used appropriately the tuning fork to be potentially useful in practice.

A brief summary of pertinent points:

- There appears to be consensus on the use of a frequency of 128hz
- The tuning fork test should not be used as the sole means of diagnosis of a potential fracture, i.e. any competent practitioner will start with a full case history followed by a physical examination and evaluate all of this information before making any conclusions.
- A negative test may be unreliable but if the test is positive alongside additional factors consistent with possible fracture then the result should not be ignored and within the context of osteopathic practice should be assumed to indicate a possible fracture, triggering appropriate referral.

<http://www.greenhill-osteopath.co.uk/blog/?p=656>