

**“Neuromuscular Thermography
in Orthopaedic Surgery. A Usage Poll”**
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This poll was conducted by a simple mail questionnaire sent to a sample of 405 Active Fellows of the American Academy of Orthopaedic Surgeons (AAOS). The sample was drawn by selecting lines on the pages of the AAOS membership list at random. Assuming that each Fellow's entry comprises a single line (or more than one line provided that the number of lines is the same for each Fellow), this procedure produces a simple random sample of Fellows. As such, it should provide a representative cross-section of AAOS Fellows (assuming all sampled Fellows respond to the survey).

After two mailings a good response rate of 78% was achieved. Nevertheless, the question arises whether the nonrespondents are likely to differ systematically from the respondents. Consider the reported finding that only 6% of Fellows who evaluated or treated patients with neck or back problems used thermography. If one assumes at one extreme that all the nonrespondents evaluated or treated patients with neck or back problems and none used thermography, then the usage rate would fall to 5%. If one assumes at the other extreme that all the nonrespondents evaluated or treated patients with neck or back problems and all used thermography, then the usage rate would rise to 28%. In general, one might expect that the nonrespondents to a survey of this sort would be uninvolved with the particular technology. If this is true of this survey, the usage rate for thermography is low (around 5%–6%). However, if many of the nonrespondents were users of thermography, then the usage rate would be higher (for instance, if half of the nonrespondents were users, the rate would be 15% or more). This latter situation would, for instance, apply if users had a particular reason not to respond to the survey.

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With regard to the effectiveness of thermography, I do not think much value should be placed on the opinions of those who have no experience with it. Unfortunately, the questionnaire does not distinguish those with and without experience in thermography, but only users and nonusers. Those with experience in thermography who are not current users may be expected to be less positive about the technique than current users.

The sample of 18 users is very small, and estimates derived from it are subject to large sampling errors. Thus, for instance, 39% (7 out of 18) of the sample users find thermography helpful: the 95% confidence interval for the percentage of the population of users finding thermography helpful is from 17% to 64%. Similarly, 33% (6 out of 18) of the sample users consider thermography valid: the 95% confidence interval for the percentage of the population of users considering thermography valid is from 13% to 59%. These intervals are very wide and, moreover, assume no non-response bias.

A striking finding from the survey is that about one-half of the 18 sampled users were undecided on its helpfulness and had no opinions on its validity. In interpreting this finding, it should be noted that if users of thermography who found the technique useful and valid generally chose not to respond to the survey, the responding users could substantially overrepresent users who were undecided about the helpfulness and validity of this technology.

Finally, it should be noted that the survey results represent only the opinions of the survey respondents. Opinion surveys of this type cannot determine the validity of a technology. The determination of the validity of thermography requires experimental studies comparing thermography to accepted standards or clinical outcome.