OBJECTIVE VS. SUBJECTIVE: THE CHALLENGE OF CLEAR DOCUMENTATION OF RANGE OF MOTION

To the editors of *Physiotherapy Canada*:

After reading the editorial “Objective versus Subjective: Kudzu Terminology” in the Spring 2008 edition of *Physiotherapy Canada*, we were inspired to share a recent experience with so-called “objective” measurement.

At the Winnipeg Children’s Hospital, physiotherapists (PTs) and occupational therapists (OTs) work closely together on the Hand and Rheumatology Services. While reviewing our patient documentation practices, we learned that the OTs used a system of recording joint range of motion (ROM) that differed from the practice the PTs were using. After discussing the merits and limitations of both methods, we decided to survey our departmental colleagues regarding whether a standard or preferred method of recording ROM existed in their clinical practice.

Interestingly, we found within our Pediatric PT and OT departments that plus (+) and minus (–) signs were used to denote *both* limitation of extension *and* joint hyperextension; however, there was no agreement among us regarding which sign should be used to denote each clinical finding!

Intrigued, we decided to explore this documentation discordance outside of our department. We consulted textbooks,^{1–4} emailed PT and OT colleagues across the country, consulted with faculty members at the University of Manitoba, examined the American Society of Hand Therapy guidelines,⁵ and reviewed protocols from two large multi-centre studies.^{6,7} We undertook this exercise in an attempt to facilitate consistent and reliable measurement and recording of ROM within our hospital.

WHERE DID OUR JOURNEY LEAD US?

Replies were received from six PTs and two OTs from two provinces. These included three Certified Hand Therapists (2 PTs, 1 OT), one advanced practitioner in rheumatology (PT), and two university faculty (1 PT, 1 OT).

Our respondents were consistent with respect to the definitions of joint *limitation* and *hyperextension*. However, documentation practices mirrored the inconsistency observed in our department. Although therapists agreed that *hyperextension* refers to the ability to move beyond the “normal” zero position, some chose to use (+) to indicate excess motion at the joint, while

others used (–) to indicate motion that it is “below” or “past” zero. With respect to the term *limitation*, most sources concurred that limitation equates to the inability to achieve the neutral zero starting position. While many therapists reported using (–) to indicate lack of full extension, some also cited the start position and the end range to indicate the limitation more specifically. For example, elbow range “from 20 to 105 degrees” would indicate that the elbow lacks 20° of extension from neutral zero. There is currently no agreement on the use of (+) and (–) signs with respect to documenting patient ROM findings.

The sources that we reviewed are inconsistent and incomplete. The *Manual of Orthopedic Surgery* states that

The natural motion (of the elbow) is flexion ... Any motion beyond the zero starting position is unnatural and is referred to as hyperextension ... Hyperextension: this is measured in degrees beyond the zero starting point. This motion is not present in all individuals.^{1(p.147)}

Norkin and White explain, “The term extension, as it is used in this manual, refers to both the motion that is a return from full flexion to the zero starting position and the motion that normally occurs beyond the zero starting position [the shoulder being used as the example]”^{2(p.6)}; “The term hyperextension is used to describe a greater than normal extension ROM.”^{2(p.22)} In “Appendix A: Average Ranges of Motion,” hyperextension norms are included for metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joints only, and are listed as 0–45° and 0–10° respectively.

Pedretti states that

Abnormal hyperextension of the elbow may be recorded by indicating the number of degrees of hyperextension below the 0° starting position with a minus sign, followed by the 0° position and then the number of degrees at the final position. This may be noted as follows: Normal: 0° to 140°. Abnormal hyperextension: –20° to 0° to 140°. There are alternate methods of recording ROM. The evaluator is advised to learn and adopt the particular method required by the health care facility.^{3(p.442)}

Clarkson notes that “The only time that ROM is recorded as a negative value is when the patient cannot achieve the 0° start position.”^{4(p.14)} Hyperextension of the elbow is described as follows: “The forearm is moved in a posterior direction beyond 0° of extension. Hyperextension of 10–15° is not uncommon in females,”^{4(p.150)} but no mention is made as to how to record this.

The Physical Therapy Working Group of the National Hemophilia Foundation records both extension and hyperextension for the knee and elbow for the Universal Data Collection Project.⁶ They record only the end points of each movement, not the arc of motion. If the subject lacks full extension, it is recorded as a negative number in the “Extension” box. If there is hyperextension, it is recorded as a positive number in the “Hyperextension” box, and 0 is recorded simultaneously in the “Extension” box. The Canadian Hemophilia Society’s Prophylaxis Study Group also records only the end points of the movement. Therapists have been instructed to specify hyperextension if extension goes beyond zero.⁷

The American Society of Hand Therapists acknowledges that “there is debate surrounding the issue of how hyperextension and extension lags should be recorded,”^{5(p.68)} and recommends that “if extension exceeds the zero starting position, it is referred to as hyperextension and is expressed with a (+) symbol.”^{5(p.68)}

CLINICAL MESSAGE

Hyperextension (i.e., extension beyond zero starting position) is not common in adults but is seen quite frequently in children. The use of plus and minus signs to indicate joint limitations or hypermobility is not currently a standardized practice. In light of this fact, our department therapists have now chosen to include the actual terms “hyperextension” and “limitation” when documenting joint ROM findings. While the use of symbols (+/–) may reduce charting time, the addition of specific words to clarify the clinical picture will likely enhance interpretation of assessment findings among clinicians.

I would appear that neither the OT nor the PT profession has a gold-standard method for charting one of our most basic “objective” measurements! One cannot help but wonder which other documentation practices could use a quick methodological survey. It never hurts to ask!

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