

**Table 4-15 Fitness Categories by Age Groups for Trunk Forward Flexion Using a Sit-and-Reach Box (cm)\*†**

Category	Age									
	20-29		30-39		40-49		50-59		60-69	
Gender	M	F	M	F	M	F	M	F	M	F
Excellent	40	41	38	41	35	38	35	39	33	35
Very Good	39	40	37	40	34	37	34	38	32	34
	34	37	33	36	29	34	28	33	25	31
Good	33	36	32	35	28	33	27	32	24	30
	29	32	27	31	23	29	23	29	19	26
Fair	29	32	27	31	23	29	23	29	19	26
	25	28	23	27	18	25	16	25	15	23
Needs Improvement	24	27	22	26	17	24	15	24	14	22

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\*†Note: These norms are based on a sit-and-reach box in which the "zero" point is set at 26 cm. When using a box in which the zero point is set at 23 cm subtract 3cm from each value in this table.

## Trunk Forward Flexion

Poor lower back and hip flexibility may, in conjunction with poor abdominal strength/endurance or other causative factors, contribute to development of muscular low back pain; however, this hypothesis remains to be substantiated.<sup>65</sup> Methods for administering the sit and-reach test are presented in the Box 4-7 Normative data for two sit-and-reach test are presented in Tables 4-15 and 4-16.

## Flexibility

Flexibility is the ability to move a joint through its complete range of motion. It is important in athletic performance (e.g. ballet, gymnastics) and in the ability to carry out the activities of daily living. Consequently, maintaining flexibility of all joints beyond a joint's shortened range of motion, tissue damage can occur. Flexibility depends on a number of specific variables, including distensibility of the joint capsule, adequate warm-up, and muscle viscosity. Additionally, compliance ("tightness") of various other tissues such as ligaments and tendons affects the range of motion. Just as muscular strength is specific to the muscles involved, flexibility is joint specific; therefore, no single flexibility test can be used to evaluate total body flexibility. Laboratory tests usually quantify flexibility in terms of range while permitting the assessment of limb asymmetry.<sup>63</sup> A comparison of the two versions of the sit and reach test found no difference in movement in the sit and reach and in Cailliet's protective-hamstring stretch.<sup>64</sup> although asymmetric stretching is appropriate for flexibility training, a lack of normative data for adults precludes the inclusion of the back saver unilateral sit and reach test at this time. Poor lower back and hip flexibility may, in conjunction with poor abdominal strength/endurance or other causative factors, contribute to development of muscular low back pain; however, this hypothesis remains to be substantiated.

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