



## Effect of medication use on balance and mobility

by Debra J. Rose, Ph.D.

In addition to certain medical conditions being strongly associated with increased fall risk among the elderly, both the type and number of medications prescribed to older adults contribute to heightened fall risk. Specifically, it has been demonstrated that older adults who are taking more than four prescription medications are four times more likely to sustain a fall than their peers who are taking fewer prescription medications (Campbell, Borrie & Spears, 1989).

Certain types of medications have also been shown to elevate fall risk in older adults (Leipzig, Cumming & Tinetti, 1999a). These include most classes of psychotropic drugs such as antidepressants, neuroleptics, sedative/hypnotics, and benzodiazepines (both long- and short-acting). A comprehensive listing of these medications and their possible adverse side effects is presented in the table on page 11.

Side effects such as dizziness, reduced alertness, weakness, fatigue, and postural hypotension that result from taking these medications are all likely contributors to heightened fall risk. Finally, other intrinsic risk factors such as impaired visual acuity,

foot problems (e.g., loss of sensation, bone deformities), and the presence of depression or anxiety are also known risk factors for falls.

Given that most, if not all, clients enrolled in [a balance and mobility training] program will be taking one or more prescription medications, prospective program participants need to provide you with the names of all their medications and the medical condition for which they were prescribed. Although numerous research studies have identified many individual medications that are known to increase the risk for falling due to their effect on central nervous system function, little is currently known about how the interactive or additive effects of taking multiple medications might further affect balance and mobility.

Increased risk for falling is particularly associated with the use of antidepressant medications, with new users of these drugs at greater risk for falling than individuals who have been taking them for a while. It has also been demonstrated that older adults taking a higher dosage of an antidepressant drug experience higher fall rates. Little difference in fall rates exists among older adults prescribed different types of antidepressants (Thapa, Gideon, Cost, Milam & Ray, 1998). Older adults at greater risk of falling are those taking more than one psychotropic agent or having other risk factors for falls (Leipzig, Cumming & Tinetti, 1999a). Cardiac and analgesic medications (e.g., Digoxin, type Ia antiarrhythmic, and diuretic drugs) were also studied but were found to be only weakly associated with heightened fall risk (Leipzig, Cumming & Tinetti, 1999b).

Antidepressant use is higher among older adults living in nursing homes (35.5%) or assisted living facilities (39.8%) when compared to community-dwelling older adults (8%) (Ray & Griffin, 1990). The loss of perceived independence and control over one's life no doubt contributes to the higher use of antidepressants by older adults who are no longer able to live independently within the community.

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As an individual's level of frailty increases, it is also likely to be accompanied by increased depression. The loss of a spouse or family member is also likely to precipitate the use of these types of drugs.

Finally, be sure to inquire regularly about any changes in medications or dosage levels so that you can maintain a current list of the various medications being consumed. Because many older adults are using complementary alternative medicines (CAMs), you need to maintain a list of those medications as well (Eisenberg et al., 1993, 1998). Although little is currently known about possible interaction effects between CAMs and more traditional prescription medications, it is a good idea to maintain a record of all prescription medications as well as over-the-counter supplements being taken by your [clients].

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This article is adapted from material in Debra's recently released book, *FallProof! A Comprehensive Balance and Mobility Training Program*, published by Human Kinetics, and appears here with permission. For more information, call Human Kinetics toll-free at 800-747-4457 (U.S.) or 800-465-7301 (Canada). Or visit [www.humankinetics.com](http://www.humankinetics.com).

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### Web resources

The following websites feature helpful information about medications and their side effects:

[www.healthsquare.com](http://www.healthsquare.com)

[www.healthtouch.com](http://www.healthtouch.com)

[www.medications-online.com](http://www.medications-online.com)



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## Generic and brand names of medications commonly prescribed to older adults and their possible side effects

Class of medication	Medical condition	Possible side effects
<b>Benzodiazepines</b> (antianxiety)		
Alprazolam (Xanax) Bromazepam Lectopam Buspirone Clonazepam (Klonopin) Chlorazepate (Tranxene) Chlor diazepam (Librium) Diazepam (Valium) Doxepine Estazolam Flurazepam (Dalmane) Halazepam Hydroxyzine Lorazepam (Ativan) Oxazepam Prazepam (Centrax) Quazepam (Doral) Temazepam (Restoril) Triazolam	Nervous tension Panic attacks Moderate anxiety	Instability, light-headedness, dizziness, sedative effect—"hangover effects," decreased central processing/alertness, coordination/impaired balance
<b>Antidepressants</b>		
Amitriptyline (Elavil, Endep) Amoxapine (Asendin) Bupropion (Wellbutrin) Clomipramine (Anafranil) Citalopram Desipramine Doxepine Fluoxetine (Prozac) Mirtazapine Nefazodone Nortriptyline Imipramine Paroxetine (Paxil) Phenelzine Sertraline (Zoloft) Venlafaxine	Mild to moderate depression	Headaches, blurred vision, dizziness, memory problems, decreased central processing/alertness, orthostatic hypotension, unsteady gait, weakness
<b>Hypnotics (sedatives)</b>		
Chloral hydrate (Aquachloral, Noctec) Phenobarbital Pentobarbital Temazepam (Restoril) Trazodone Secobarbital Zolpidem	Insomnia, stress	Mild "hangover," drowsiness, lethargy, blurred vision, confusion, depression, dizziness, unsteadiness, altered coordination
<b>Diuretics</b>		
Chlorthalidone (Hygroton) Furosemide (Lasix) HCTZ (Esidrix, Hydrodiuril) Metolazone (Diulo, Zaroxolyn) Triamterene (Dyrenium) Spironolactone (Aldactone)	Hypertension, edema	Drowsiness, temporary nearsightedness, dehydration, light-headedness, orthostatic hypotension, muscle fatigue and cramping, weakness, dizziness, blurred vision