Putting a Strain on Workers' Health

BLS data indicate that sprains, strains, and tears accounted for approximately 44 percent of all occupational injuries that resulted in days away from work in the United States in 1996.

TIMOTHY WEBSTER

When you think of occupational injuries and illnesses, what comes to mind? Fractures and lacerations? Bruises and burns? Respiratory disease? These occupational injuries and illnesses do occur, but not in the majority of cases. The most prevalent nature, or principal physical characteristic identifying nonfatal occupational injuries and illnesses involving days away from work in the United States, is sprains, strains, and tears. BLS data indicate that this type of injury accounted for approximately 44 percent of all days away from work cases in 1996. Sprains, strains, and tears also accounted for a high percentage of the total number of cases within each industry division in 1996, ranging from a low of 34 percent in agriculture, forestry, and fishing to a high of 53 percent in transportation and public utilities. Although the number of sprains, strains, and tears has fallen between 1992 and 1996, such injuries have remained a relatively constant proportion of the total number of cases.[1] (See table 1.)

What are sprains, strains, and tears? They are traumatic injuries to muscles, tendons, ligaments, and joints resulting from sudden wrenching, twisting, stretching, and ripping. This classification does not include tendonitis or bursitis, illnesses that generally occur over time as a result of repetitive activity. How do sprains, strains, and tears occur? What part of the body is most affected? Which occupations have the highest number of cases? These and related questions can be answered using data on case characteristics from the BLS Survey of Occupational Injuries and Illnesses. The remainder of this article refers to data from the 1996 survey.

Timothy Webster is an economist in the Office of Safety, Health and Working Conditions, Bureau of Labor Statistics.
Telephone: (202) 606-6179
E-mail: Webster_T@bls.gov

Selected characteristics

Event or exposure. Event or exposure is the manner in which an injury was inflicted. Examples of events include falls, slips and trips, assaults, and contact with objects. As can be seen in table 2, overexertion was the major event or exposure for sprains, strains, and tears. This occurs when the physical effort of a worker who lifts, pulls, pushes, holds, carries, wields, or throws an object results in an injury. The object being handled often exceeds the weight that a worker should be handling or is handled improperly, for example, lifting from a shelf that is too high, or in a space that is cramped. Within the broad category of sprains, strains, and tears caused by overexertion, most incidents resulted specifically from overexertion in lifting.

The second most common event or exposure was bodily reaction. This occurs when a single incident of free bodily motion imposes stress or strain on a part of the body. This classification includes bending, crawling, reaching, twisting, sudden reaction when surprised, and walking or running—without other incident. This classification also includes standing, and slips, trips, or loss of balance—without fall. Falls on the same level were the third most common event, followed by contact with objects or equipment.

Part of body. Among cases involving sprains, strains, and tears, the part of the body most affected was the back. This is not surprising, especially given that 31 percent of all sprains, strains, and tears cases are the result of overexer-

tion in lifting. Shoulders and knees tied for the second most often sprained, strained, and torn parts of the body.

Source of injury. The source of the injury is the object, substance, or bodily motion that directly produced the injury or illness. For example, the event causing an injury may be "struck by object," while the source is the object itself, say a beam or a pipe. Containers and worker motion were the two leading sources of sprains, strains, and tears cases, each accounting for approximately one-fifth of the cases. Containers include boxes, crates, cartons, tanks, buckets, packages, bundles, and bales. The most frequent event associated with containers as the source was overexertion. Injuries recorded as having worker motion or position as the source almost always have bodily reaction as the event, and were inflicted because of bodily stress resulting from reaching, twisting, bending, turning, or walking. This is one instance for which event and source are essentially the same. Floor and ground surfaces were the third most common source, followed by parts and materials, and health care patients. Floor and ground surfaces are frequently associated with falls, while parts and materials and health care patients are most often associated with overexertion.

Occupation. Operators, fabricators, and laborers incurred the highest number of sprains, strains, and tears cases. Within this category, handlers, cleaners, helpers, and laborers had the most cases, followed by transportation and material moving occupations, specifically truck drivers. Handlers, cleaners, helpers, and laborers includes construction laborers, non-construction laborers, stock handlers and baggers, and freight and material handlers. Next in frequency were service occupations, specifically nurses' aides and orderlies. Not surprisingly, all of these occupations require a significant amount of lifting, moving of objects, and bodily motion. Handlers, cleaners, helpers, and laborers, and truckdrivers most frequently move containers and parts and materials, while nurses' aides and orderlies primarily move health care patients.

Workdays lost. The median number of days away from work designates the point at which half the total cases involved more days away and half involved fewer. The median number of days away from work for sprains, strains, and tears cases is 6, 1 day more than the median for all cases. In 1996, a large number of sprains, strains, and tears involved a significant number of days away from work. In 18 percent of the cases, workers were away from work 31 or more days.

Summary

The category sprains, strains, and tears is the leading nature of injury among nonfatal occupational injuries and illnesses. Workers receive these injuries when lifting objects that are too heavy, when working in awkward positions for an extended period of time, or when twisting, bending, falling, and slipping. These injuries tend to be serious, with a median 6 days away from work. ■

---

[1] The Census of Fatal Occupational Injuries (CFOI), a companion to the Survey of Occupational Injuries and Illnesses (SOII), counts the annual number of fatal injuries in the workplace. As in SOII, CFOI records case and demographic information (for example, industry, occupation, nature, event, source) for each incident. According to the census, between 1992 and 1997, 33 cases with sprain, strain, and tear as the nature of injury resulted in death due to medical complications associated with the injury. Medical complications included those related to surgery following the injury, embolism, or other causes.

TABLE 1. **Number of sprain, strain, and tear nonfatal occupational injury cases resulting in days away from work, by major industry division, private industry, 1992-96**

Major industry division	1992		1993		1994		1995		1996	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All injury and illness cases	2,331,100		2,252,500		2,236,600		2,040,900		1,880,525	
Sprains, strains, tears	1,022,746	100	959,163	100	963,496	100	876,792	100	819,658	100
Agriculture, forestry and fishing	18,273	2	15,948	2	14,845	2	15,711	2	13,080	2
Mining	9,508	1	8,928	1	8,238	1	8,367	1	5,849	1
Construction	79,022	8	76,971	8	80,967	8	72,404	8	68,649	8
Manufacturing	247,895	24	222,548	23	223,269	23	198,682	23	176,699	22
Transportation and public utilities	113,560	11	116,142	12	123,304	13	112,809	13	117,749	14
Wholesale trade	80,700	8	73,470	8	74,611	8	72,146	8	64,299	8
Retail trade	172,502	17	163,225	17	165,888	17	143,412	16	135,008	16
Finance, insurance, and real estate	24,248	2	22,128	2	20,252	2	17,259	2	17,154	2
Services	277,038	27	259,803	27	252,121	26	236,003	27	221,171	27

NOTE: Because of rounding, components may not add to totals.

TABLE 2. **Percent distribution of sprain, strain, and tear nonfatal occupational injury cases involving days away from work, by selected characteristics, 1996**

Characteristics	Percent	Characteristics	Percent
Total cases (819,658)	100	Parts and materials	10
		Health care patient	8
Event or exposure		All other sources	24
Total	100		
Overexertion, all types	52	Occupation	
Lifting	31	Total	100
Bodily Reaction	19	Operators, fabricators, and laborers	42
Fall on the same level	10	Handlers, cleaners, helpers, and laborers	16
Contact with object, equipment	6	Transportation and material moving	13
Fall to lower level	4	Truckdrivers	10
All other events, exposures	9	Service	20
		Nursing aides, orderlies	8
Part of body		Janitors and cleaners	3
Total	100	Technical, sales, and administrative support	15
Trunk	62	Precision production, craft, and repair	14
Back	49	Managerial and professional	6
Shoulder	8	Registered nurses	2
Lower extremities	20	Farming, forestry, and fishing	3
Knee	8		
Upper extremities	9	Workdays lost (median workdays lost = 6)	
Wrist	3	Total	100
All other parts of body	9	1	14
		2	13
Source of injury		3 to 5	23
Total	100	6 to 10	14
Containers	22	11 to 20	12
Worker motion or position	21	21 to 30	6
Floor, ground surfaces	15	31 or more	18

NOTE: Overall categories may include data for classifications not shown.