

<i>Female</i>					
Employment on permanent basis	4475	81,4	37,7	36,7	25,6
Fixed term contract, and temporary employment					
Agency contract	679	12,8	44,7	34,8	20,5
Apprenticeship or other training scheme	11	0,2	..	..	..
Self-employed	268	5,2	36,0	44,6	19,5
Other	20	0,4	..	..	..
Total	5453	100,0	38,5	36,8	24,7
<i>Total</i>					
Employment on permanent basis	8753	80,0	33,2	36,5	30,3
Fixed term contract, and temporary employment					
Agency contract	1091	10,3	41,6	35,6	22,8
Apprenticeship or other training scheme	19	0,2	..	..	..
Self-employed	942	9,2	36,8	37,0	26,2
Other	34	0,3	..	..	..
Total	10839	100,0	34,5	36,4	29,1

B) Source: The Working Environment Survey 1995 (Statistic Sweden)

Question: Do you sometimes work bending forward without supporting yourself with your hands or arms?

Swedish format as follows:

1=Nearly all the time

2=Half of the time

3=Roughly 3/4 of the time

4=Roughly 1/4 of the time

5=Some (perhaps 1/10 of the time)

6=No, not at all

When less than one hundred respondents(...)	Sample size		% of workers exposed during			
	N	%	(almost) All of the time 1	¼ or ½ of the time 2 and 3	Around ¼ of the time 4	(almost) Never 5 and 6
Total	10860	100,0	4,6	11,8	11,1	72,5
Gender						
Male	5393	52,0	4,4	11,5	11,6	72,6
Female	5467	48,0	4,9	12,2	10,6	72,3
Age						
<i>Male</i>						
<25 years (16-24 years)	455	8,4	5,7	14,5	15,9	63,9
25-54 years	4162	77,5	4,1	11,3	11,1	73,5
=>55 years (55-64 years)	776	14,1	5,1	10,7	11,4	72,7
Total	5393	100,0	4,4	11,5	11,6	72,6
<i>Female</i>						
<25 years (16-24 years)	499	9,4	6,3	18,3	12,3	63,1
25-54 years	4178	76,1	4,4	11,8	10,6	73,2
=>55 years (55-64 years)	790	14,5	6,7	10,4	9,0	74,0
Total	5467	100,0	4,9	12,2	10,6	72,3
<i>Total</i>						
<25 years (16-24 years)	954	8,9	6,0	16,4	14,1	63,5
25-54 years	8340	76,8	4,2	11,5	10,9	73,4
=>55 years (55-64 years)	1566	14,3	5,9	10,6	10,2	73,3
Total	10860	100,0	4,6	11,8	11,1	72,5

Sector						
<i>Male</i>						
Agriculture, hunting, forestry and fishing	249	4,5	10,6	24,6	18,6	46,2
Mining, quarrying and manufacturing	1646	29,8	5,3	11,5	12,6	70,7
Electricity, gas and water supply	79	1,4	..	..	..	..
Construction	528	9,9	7,1	23,9	20,1	48,9
Wholesale and retail trade, repairs	619	12,4	3,3	10,8	11,2	74,7
Hotels and restaurants	72	1,4	..	..	..	..
Transport and communication	466	8,9	3,8	8,5	9,8	77,9
Financial intermediation	111	2,0	3,2	0,8	1,1	94,9
Real estate and business activities	558	10,4	2,5	7,4	6,8	83,3
Public administration	338	6,1	0,3	3,5	3,4	92,9
Other services	727	13,2	2,9	8,7	10,0	78,3
Total	5393	100,0	4,4	11,5	11,6	72,6
<i>Female</i>						
Agriculture, hunting, forestry and fishing	72	1,5	..	..	..	..
Mining, quarrying and manufacturing	601	11,1	5,0	10,7	6,4	78,0
Electricity, gas and water supply	26	0,4	..	..	..	..
Construction	52	0,9	..	..	..	..
Wholesale and retail trade, repairs	593	11,4	4,2	9,6	6,7	79,5
Hotels and restaurants	129	2,6	9,1	19,3	15,6	56,1
Transport and communication	227	4,4	2,8	5,5	5,8	85,8
Financial intermediation	124	2,2	0,0	2,4	0,7	96,9
Real estate and business activities	420	7,7	4,1	7,7	5,4	82,8
Public administration	275	4,9	0,4	3,4	2,6	93,7
Other services	2948	52,9	5,6	15,5	14,3	64,5
Total	5467	100,0	4,9	12,2	10,6	72,3
<i>Total</i>						
Agriculture, hunting, forestry and fishing	321	3,1	10,9	21,0	18,3	49,8
Mining, quarrying and manufacturing	2247	20,8	5,2	11,3	11,0	72,5
Electricity, gas and water supply	105	0,9	1,3	5,7	10,5	82,5
Construction	580	5,6	6,7	22,3	18,7	52,3
Wholesale and retail trade, repairs	1212	12,0	3,7	10,2	9,2	76,9
Hotels and restaurants	201	2,0	8,7	18,8	17,8	54,7
Transport and communication	693	6,7	3,5	7,6	8,5	80,4
Financial intermediation	235	2,1	1,6	1,6	0,9	95,9
Real estate and business activities	978	9,1	3,1	7,5	6,2	83,1
Public administration	613	5,5	0,3	3,4	3,0	93,2
Other services	3675	32,2	5,0	14,1	13,4	67,5
Total	10860	100,0	4,6	11,8	11,1	72,5
Company size						
<i>Male</i>						
0-9	1541	29,8	5,4	14,3	13,9	66,3
10-49	1627	30,3	4,1	12,2	13,0	70,6
50-99	600	11,0	3,7	9,9	9,6	76,7
100-499	1001	18,2	3,9	8,9	7,3	79,9
500 or more	610	10,7	3,6	7,6	10,6	78,3
Total	5379	100,0	4,4	11,5	11,6	72,5
<i>Female</i>						
0-9	1400	26,2	5,2	12,1	10,5	72,2
10-49	2216	40,5	5,5	13,0	11,5	70,0
50-99	669	12,2	4,3	11,5	10,2	74,0
100-499	705	12,8	4,1	11,2	7,9	76,8
500 or more	457	8,3	2,9	11,3	10,4	75,4
Total	5447	100,0	4,9	12,2	10,5	72,4

<i>Total</i> 0-9	2941	28,1	5,3	13,3	12,4	68,9
Agency contract	679	12,8	6,2	15,3	13,2	65,2
Apprenticeship or other training scheme	11	0,2	..	..	..	..
Self-employed	268	5,2	8,2	12,9	12,0	66,9
Other	20	0,4	..	..	..	..
<i>Total</i>	5453	100,0	4,9	12,2	10,5	72,4
<i>Total</i> Employment on permanent basis	8753	80,0	4,0	11,2	10,4	74,4
Fixed term contract, and temporary employment						
Agency contract	1091	10,3	6,3	14,1	13,3	66,4
Apprenticeship or other training scheme	19	0,2	..	..	..	..
Self-employed	942	9,2	7,3	15,1	14,2	63,5
Other	34	0,3	..	..	..	..
<i>Total</i>	10839	100,0	4,6	11,8	11,1	72,5

C) Source: The Working Environment Survey 1995 (Statistic Sweden)

Question: Do you sometimes work in a twisted postures?

Swedish format as follows:

1=Nearly all the time

2=Half of the time

3=Roughly 3/4 of the time

4=Roughly 1/4 of the time

5=Some (perhaps 1/10 of the time)

6=No, not at all

When less than one hundred respondents(..)	Sample size		% of workers exposed during			
	N	%	(almost) All of of the time 1	% or ½ of the time 2 and 3	Around ¼ of the time 4	(almost) Never 5 and 6
Total	10860	100,0	4,0	10,9	12,1	73,0
Gender						
Male	5393	52,0	3,7	10,2	12,6	73,5
Female	5467	48,0	4,3	11,5	11,7	72,5
Age						
<i>Male</i>						
<25 years (16-24 years)	455	8,4	3,0	13,2	18,8	65,0
25-54 years	4162	77,5	3,6	9,9	12,2	74,3
=>55 years (55-64 years)	776	14,1	4,5	10,1	10,9	74,4
Total	5393	100,0	3,7	10,2	12,6	73,5
<i>Female</i>						
<25 years (16-24 years)	499	9,4	7,9	15,4	15,7	61,0
25-54 years	4178	76,1	3,9	11,6	11,3	73,2
=>55 years (55-64 years)	790	14,5	4,6	8,4	10,9	76,1
Total	5467	100,0	4,3	11,5	11,7	72,5
<i>Total</i>						
<25 years (16-24 years)	954	8,9	5,5	14,4	17,2	63,0
25-54 years	8340	76,8	3,7	10,7	11,8	73,8
=>55 years (55-64 years)	1566	14,3	4,6	9,3	10,9	75,2
Total	10860	100,0	4,0	10,9	12,1	73,0
Sector						
<i>Male</i>						
Agriculture, hunting, forestry and fishing	249	4,5	6,7	22,6	25,1	45,6
Mining, quarrying and manufacturing	1646	29,8	5,1	10,6	11,8	72,6
Electricity, gas and water supply	79	1,4	..	..	..	..
Construction	528	9,9	4,8	19,1	25,0	51,1
Wholesale and retail trade, repairs	619	12,4	2,4	9,0	10,7	77,9
Hotels and restaurants	72	1,4	..	..	..	..
Transport and communication	466	8,9	3,6	11,4	15,0	70,0
Financial intermediation	111	2,0	2,2	3,0	10,4	84,4
Real estate and business activities	558	10,4	2,4	5,7	7,6	84,3
Public administration	338	6,1	0,4	2,2	5,9	91,5
Other services	727	13,2	2,8	7,3	7,4	82,5
Total	5393	100,0	3,7	10,2	12,6	73,5

When less than one hundred respondents(..)	Sample size		% of workers exposed during			
	N	%	(almost) All of the time 1	% or ½ of the time 2 and 3	Around ¼ of the time 4	(almost) Never 5 and 6
Total	10860	100,0	4,0	10,9	12,1	73,0
Gender						
Male	5393	52,0	3,7	10,2	12,6	73,5
Female	5467	48,0	4,3	11,5	11,7	72,5
Age						
Male						
<25 years (16-24 years)	455	8,4	3,0	13,2	18,8	65,0
25-54 years	4162	77,5	3,6	9,9	12,2	74,3
=>55 years (55-64 years)	776	14,1	4,5	10,1	10,9	74,4
Total	5393	100,0	3,7	10,2	12,6	73,5
Female						
<25 years (16-24 years)	499	9,4	7,9	15,4	15,7	61,0
25-54 years	4178	76,1	3,9	11,6	11,3	73,2
=>55 years (55-64 years)	790	14,5	4,6	8,4	10,9	76,1
Total	5467	100,0	4,3	11,5	11,7	72,5
Total						
<25 years (16-24 years)	954	8,9	5,5	14,4	17,2	63,0
25-54 years	8340	76,8	3,7	10,7	11,8	73,8
=>55 years (55-64 years)	1566	14,3	4,6	9,3	10,9	75,2
Total	10860	100,0	4,0	10,9	12,1	73,0
Sector						
Male						
Agriculture, hunting, forestry and fishing	249	4,5	6,7	22,6	25,1	45,6
Mining, quarrying and manufacturing	1646	29,8	5,1	10,6	11,8	72,6
Electricity, gas and water supply	79	1,4	..	..	..	..
Construction	528	9,9	4,8	19,1	25,0	51,1
Wholesale and retail trade, repairs	619	12,4	2,4	9,0	10,7	77,9
Hotels and restaurants	72	1,4	..	..	..	..
Transport and communication	466	8,9	3,6	11,4	15,0	70,0
Financial intermediation	111	2,0	2,2	3,0	10,4	84,4
Real estate and business activities	558	10,4	2,4	5,7	7,6	84,3
Public administration	338	6,1	0,4	2,2	5,9	91,5
Other services	727	13,2	2,8	7,3	7,4	82,5
Total	5393	100,0	3,7	10,2	12,6	73,5

When less than one hundred respondents(..)	Sample size		% of workers exposed during			
	N	%	(almost) All of of the time 1	% or ½ of the time 2 and 3	Around ¼ of the time 4	(almost) Never 5 and 6
Total	10860	100,0	4,0	10,9	12,1	73,0
Gender						
Male	5393	52,0	3,7	10,2	12,6	73,5
Female	5467	48,0	4,3	11,5	11,7	72,5
Age						
Male						
<25 years (16-24 years)	455	8,4	3,0	13,2	18,8	65,0
25-54 years	4162	77,5	3,6	9,9	12,2	74,3
=>55 years (55-64 years)	776	14,1	4,5	10,1	10,9	74,4
Total	5393	100,0	3,7	10,2	12,6	73,5
Female						
<25 years (16-24 years)	499	9,4	7,9	15,4	15,7	61,0
25-54 years	4178	76,1	3,9	11,6	11,3	73,2
=>55 years (55-64 years)	790	14,5	4,6	8,4	10,9	76,1
Total	5467	100,0	4,3	11,5	11,7	72,5
Total						
<25 years (16-24 years)	954	8,9	5,5	14,4	17,2	63,0
25-54 years	8340	76,8	3,7	10,7	11,8	73,8
=>55 years (55-64 years)	1566	14,3	4,6	9,3	10,9	75,2
Total	10860	100,0	4,0	10,9	12,1	73,0
Sector						
Male						
Agriculture, hunting, forestry and fishing	249	4,5	6,7	22,6	25,1	45,6
Mining, quarrying and manufacturing	1646	29,8	5,1	10,6	11,8	72,6
Electricity, gas and water supply	79	1,4	..	..	..	..
Construction	528	9,9	4,8	19,1	25,0	51,1
Wholesale and retail trade, repairs	619	12,4	2,4	9,0	10,7	77,9
Hotels and restaurants	72	1,4	..	..	..	..
Transport and communication	466	8,9	3,6	11,4	15,0	70,0
Financial intermediation	111	2,0	2,2	3,0	10,4	84,4
Real estate and business activities	558	10,4	2,4	5,7	7,6	84,3
Public administration	338	6,1	0,4	2,2	5,9	91,5
Other services	727	13,2	2,8	7,3	7,4	82,5
Total	5393	100,0	3,7	10,2	12,6	73,5

When less than one hundred respondents(..)	Sample size		% of workers exposed during			
	N	%	(almost) All of the time 1	% or ½ of the time 2 and 3	Around ¼ of the time 4	(almost) Never 5 and 6
Total	10860	100,0	4,0	10,9	12,1	73,0
Gender						
Male	5393	52,0	3,7	10,2	12,6	73,5
Female	5467	48,0	4,3	11,5	11,7	72,5
Age						
Male						
<25 years (16-24 years)	455	8,4	3,0	13,2	18,8	65,0
25-54 years	4162	77,5	3,6	9,9	12,2	74,3
=>55 years (55-64 years)	776	14,1	4,5	10,1	10,9	74,4
Total	5393	100,0	3,7	10,2	12,6	73,5
Female						
<25 years (16-24 years)	499	9,4	7,9	15,4	15,7	61,0
25-54 years	4178	76,1	3,9	11,6	11,3	73,2
=>55 years (55-64 years)	790	14,5	4,6	8,4	10,9	76,1
Total	5467	100,0	4,3	11,5	11,7	72,5
Total						
<25 years (16-24 years)	954	8,9	5,5	14,4	17,2	63,0
25-54 years	8340	76,8	3,7	10,7	11,8	73,8
=>55 years (55-64 years)	1566	14,3	4,6	9,3	10,9	75,2
Total	10860	100,0	4,0	10,9	12,1	73,0
Sector						
Male						
Agriculture, hunting, forestry and fishing	249	4,5	6,7	22,6	25,1	45,6
Mining, quarrying and manufacturing	1646	29,8	5,1	10,6	11,8	72,6
Electricity, gas and water supply	79	1,4	..	..	..	..
Construction	528	9,9	4,8	19,1	25,0	51,1
Wholesale and retail trade, repairs	619	12,4	2,4	9,0	10,7	77,9
Hotels and restaurants	72	1,4	..	..	..	..
Transport and communication	466	8,9	3,6	11,4	15,0	70,0
Financial intermediation	111	2,0	2,2	3,0	10,4	84,4
Real estate and business activities	558	10,4	2,4	5,7	7,6	84,3
Public administration	338	6,1	0,4	2,2	5,9	91,5
Other services	727	13,2	2,8	7,3	7,4	82,5
Total	5393	100,0	3,7	10,2	12,6	73,5

D) Source: The Working Environment Survey 1995 (Statistic Sweden)

Question: Do you sometimes work with your hands raised to the level of your shoulders or higher?

Swedish format as follows:

1=Nearly all the time

2=Half of the time

3=Roughly 3/4 of the time

4=Roughly 1/4 of the time

5=Some (perhaps 1/10 of the time)

6=No, not at all

When less than one hundred respondents(...)	Sample size		% of workers exposed during			
	N	%	(almost) All of of the time 1	% or ½ of the time 2 and 3	Around ¼ of the time 4	(almost) Never 5 and 6
Total	10860	100,0	2,8	7,5	8,4	81,2
Gender						
Male	5393	52,0	2,7	8,8	10,2	78,2
Female	5467	48,0	2,9	6,1	6,5	84,5
Age						
<i>Male</i>						
<25 years (16-24 years)	455	8,4	3,8	12,0	13,9	70,3
25-54 years	4162	77,5	2,5	8,6	10,1	78,8
=>55 years (55-64 years)	776	14,1	3,2	7,9	8,7	80,2
Total	5393	100,0	2,7	8,8	10,2	78,2
<i>Female</i>						
<25 years (16-24 years)	499	9,4	4,6	9,4	8,6	77,5
25-54 years	4178	76,1	2,6	5,6	6,2	85,5
=>55 years (55-64 years)	790	14,5	3,1	6,6	6,9	83,4
Total	5467	100,0	2,9	6,1	6,5	84,5
<i>Total</i>						
<25 years (16-24 years)	954	8,9	4,2	10,6	11,2	74,0
25-54 years	8340	76,8	2,6	7,2	8,2	82,0
=>55 years (55-64 years)	1566	14,3	3,1	7,3	7,8	81,8
Total	10860	100,0	2,8	7,5	8,4	81,2

When less than one hundred respondents(..)	Sample size		% of workers exposed during			
	N	%	(almost) All of of the time 1	% or % of the time 2 and 3	Around % of the time 4	(almost) Never 5 and 6
Total	10860	100,0	2,8	7,5	8,4	81,2
Gender						
Male	5393	52,0	2,7	8,8	10,2	78,2
Female	5467	48,0	2,9	6,1	6,5	84,5
Age						
Male						
<25 years (16-24 years)	455	8,4	3,8	12,0	13,9	70,3
25-54 years	4162	77,5	2,5	8,6	10,1	78,8
=>55 years (55-64 years)	776	14,1	3,2	7,9	8,7	80,2
Total	5393	100,0	2,7	8,8	10,2	78,2
Female						
<25 years (16-24 years)	499	9,4	4,6	9,4	8,6	77,5
25-54 years	4178	76,1	2,6	5,6	6,2	85,5
=>55 years (55-64 years)	790	14,5	3,1	6,6	6,9	83,4
Total	5467	100,0	2,9	6,1	6,5	84,5
Total						
<25 years (16-24 years)	954	8,9	4,2	10,6	11,2	74,0
25-54 years	8340	76,8	2,6	7,2	8,2	82,0
=>55 years (55-64 years)	1566	14,3	3,1	7,3	7,8	81,8
Total	10860	100,0	2,8	7,5	8,4	81,2
Total	10826	100,0	2,8	7,5	8,5	81,2

Occupation						
<i>Male</i>						
Legislators, senior officials and managers	214	4.0	0.0	1.6	1.9	96.5
Professionals	910	16.3	0.5	1.5	2.5	95.5
Technicians and associated professionals	1192	21.9	1.1	4.0	4.2	90.7
Clerks	314	5.7	3.1	7.3	12.1	77.6
Service workers, shop, market sales workers	343	6.8	2.3	4.7	6.4	86.6
Skilled agricultural and fishery workers	203	3.7	2.1	6.1	16.7	75.1
Craft and related trade workers	1082	20.8	5.3	22.4	22.9	49.4
Plant and machine operators	857	15.8	3.5	9.8	10.6	76.1
Elementary occupations	208	3.9	8.7	11.1	15.5	64.7
Armed forces	46	0.7	..	..	..	..
Occupation unknown	21	0.4	..	..	..	..
Total	5390	100.0	2.7	8.8	10.2	78.2
<i>Female</i>						
Legislators, senior officials and managers	127	2.3	0.0	1.7	2.0	96.3
Professionals	957	17.3	0.9	3.1	4.0	92.0
Technicians and associated professionals	1023	18.3	1.4	2.6	4.0	92.0
Clerks	896	16.5	1.7	4.8	3.5	90.1
Service workers, shop, market sales workers	1660	30.3	4.1	7.0	8.1	80.8
Skilled agricultural and fishery workers	65	1.4	..	..	..	..
Craft and related trade workers	107	2.1	7.4	13.8	12.0	66.8
Plant and machine operators	187	3.5	7.2	12.5	9.8	70.6
Elementary occupations	428	8.1	5.7	13.2	14.8	66.3
Armed forces	0	0.0	..	..	..	..
Occupation unknown	11	0.2	..	..	..	..
Total	5461	100.0	2.9	6.1	6.5	84.5
<i>Total</i>						
Legislators, senior officials and managers	341	3.2	0.0	1.6	1.9	96.4
Professionals	1867	16.7	0.7	2.3	3.3	93.8
Technicians and associated professionals	2215	20.2	1.2	3.4	4.1	91.3
Clerks	1210	10.9	2.1	5.4	5.8	86.7
Service workers, shop, market sales workers	2003	18.1	3.7	6.6	7.8	82.0
Skilled agricultural and fishery workers	268	2.6	2.8	11.3	16.0	69.9
Craft and related trade workers	1189	11.8	5.5	21.7	22.0	50.9
Plant and machine operators	1044	9.9	4.1	10.3	10.4	75.2
Elementary occupations	636	5.9	6.7	12.5	15.1	65.7
Armed forces	46	0.4	..	..	..	..
Occupation unknown	32	0.3	..	..	..	..
Total	10851	100.0	2.8	7.5	8.4	81.3
Employment status						
<i>Male</i>						
Employment on permanent basis	4278	78.6	2.6	8.4	9.6	79.4
Fixed term contract, and temporary employment agency contract	412	8.1	3.1	10.3	11.0	75.6
Apprenticeship or other training scheme	8	0.2	..	..	..	..
Self-employed	674	12.9	3.2	10.5	13.4	72.9
Other	14	0.2	..	..	..	..
Total	5386	100.0	2.7	8.8	10.3	78.2
<i>Female</i>						
Employment on permanent basis	4475	81.4	2.5	5.7	6.4	85.5
Fixed term contract, and temporary employment agency contract	679	12.8	2.5	6.5	6.4	84.6
Apprenticeship or other training scheme	11	0.2	..	..	..	..
Self-employed	268	5.2	10.6	11.3	7.9	70.2
Other	20	0.4	..	..	..	..
Total	5453	100.0	2.9	6.1	6.5	84.5
<i>Total</i>						
Employment on permanent basis	8753	80.0	2.5	7.1	8.0	82.4
Fixed term contract, and temporary employment agency contract	1091	10.3	2.8	8.0	8.3	80.9
Apprenticeship or other training scheme	19	0.2	..	..	..	..
Self-employed	942	9.2	5.2	10.8	11.9	72.1
Other	34	0.3	..	..	..	..
Total	10839	100.0	2.8	7.5	8.4	81.2

Risk categories: strenuous working postures at the workplace

The 5 sectors with the highest risk.

According to categories mentioned in Annex I, NACE-1993.

Ector	Qualitative considerations
<ul style="list-style-type: none">• 45 Construction• 85 Health and Social Work• 93 Other Service activities• 55 Hotels and Restaurants• 01 Agriculture, Hunting and related service activities• 15 Manufacture of Food Products and Beverages	Entries are based on the LFS/WES study and on estimates by experts at the Swedish National Board of Occupational Safety and Health

The 5 occupations with the highest risk.

According to the categories mentioned in Annex II, ISCO-1988.

Occupation	Qualitative considerations
<ul style="list-style-type: none">• 71 Extraction and building trades workers• 72 Metal, machinery and related trades workers• 93 Labourers in mining, construction, manufacturing and transport• 74 Other craft and related trades workers• 51 Personal and protective services workers	The entries are based on estimates the LFS/WES study and by experts at the Swedish National Board of Occupational Safety and Health

Trends: Strenuous working postures

The number of workers exposed has over the last 3 - 5 years:

Strenuous postures, generally has remained stable for

Male. 1991 33,2%. 1997 33,2%

However has increased for

Female. 1991 37,5%. 1997 39,3%

Evaluation of present state: strenuous working postures at the workplace

Development of additional preventive action is necessary; The implementation of the new provision on ergonomics for the protection against musculoskeletal disorders (Ordinance AFS 1998:I from the Swedish National Board of Occupational Safety and Health) calls for more distinct supervisory activities. Action against musculoskeletal disorders is included in the prioritized areas in the plan of activities for the Swedish National Board of Occupational Safety and

Health administration for the period 1997 – 1999. Already when constructing work-places one have to secure good working-postures are possible to obtain.

Comparison of EU-data and national data: Strenuous working postures

In the Swedish Working Environment Survey four indicators are used for measuring strenuous postures: the first one is general, the other three are specified and descriptive and the answering scale is about how much of the working time the respondent has the posture.

The sectors high-lighted in the EU data correspond roughly to the sectors high-lighted in the Swedish area. The occupational high-lighted in the EU data correspond roughly to the occupations high-lighted in the Swedish data.

VIBRATIONS AT THE WORKPLACE: ADDITIONAL QUANTITATIVE DATA

Source: The Working Environment Survey 1995 (Statistic Sweden)

Question: At this time of the year does your job expose you to any of the following? Vibrations from hand-held machines (for example, pneumatic machines, power saws and the like)?

Swedish format as follows:

1=Nearly all the time

2=Half of the time

3=Roughly 3/4 of the time

4=Roughly 1/4 of the time

5=Some (perhaps 1/10 of the time)

6=No, not at all

When less than one hundred respondents (..)	Sample size		% of workers exposed during			
	N	%	(almost) All of the time 1	¼ or ½ of the time 2 and 3	Around ¼ of the time 4	(almost) Never 5 and 6
Total	10860	100,0	1,1	2,6	3,3	93,0
Gender						
Male	5393	52,0	1,8	4,4	5,9	87,9
Female	5467	48,0	0,3	0,7	0,5	98,4
Age						
<i>Male</i>						
<25 years (16-24 years)	455	8,4	3,0	6,7	9,6	80,7
25-54 years	4162	77,5	1,7	4,2	5,8	88,3
=>55 years (55-64 years)	776	14,1	1,6	3,7	4,4	90,3
Total	5393	100,0	1,8	4,4	5,9	87,9
<i>Female</i>						
<25 years (16-24 years)	499	9,4	0,4	0,7	1,7	97,2
25-54 years	4178	76,1	0,3	0,8	0,5	98,4
=>55 years (55-64 years)	790	14,5	0,4	0,1	0,0	99,4
Total	5467	100,0	0,3	0,7	0,5	98,4
Total						
<25 years (16-24 years)	954	8,9	1,7	3,7	5,6	89,0
25-54 years	8340	76,8	1,0	2,6	3,3	93,1
=>55 years (55-64 years)	1566	14,3	1,0	2,0	2,3	94,7
Total	10860	100,0	1,1	2,6	3,3	93,0
Sector						
<i>Male</i>						
Agriculture, hunting, forestry and fishing	249	4,5	7,0	12,3	16,5	64,3
Mining, quarrying and manufacturing	1646	29,8	2,9	5,2	6,2	85,7
Electricity, gas and water supply	79	1,4	..	..	..	..
Construction	528	9,9	1,8	12,1	20,8	65,3
Wholesale and retail trade, repairs	619	12,4	1,6	3,7	4,9	89,7
Hotels and restaurants	72	1,4	..	..	..	..
Transport and communication	466	8,9	0,4	1,9	1,7	96,1
Financial intermediation	111	2,0	1,0	0,0	0,0	99,0
Real estate and business activities	558	10,4	0,4	1,0	2,4	96,2
Public administration	338	6,1	0,3	0,7	1,2	97,8
Other services	727	13,2	0,8	2,0	1,3	95,9
Total	5393	100,0	1,8	4,4	5,9	87,9

<i>Female</i>						
Agriculture, hunting, forestry and fishing	72	1,5	..	..	..	..
Mining, quarrying and manufacturing	601	11,1	1,5	2,6	1,0	94,9
Electricity, gas and water supply	26	0,4	..	..	..	..
Construction	52	0,9	..	..	..	..
Wholesale and retail trade, repairs	593	11,4	0,0	0,5	0,4	99,1
Hotels and restaurants	129	2,6	0,9	0,0	0,7	98,5
Transport and communication	227	4,4	0,0	0,0	0,0	100,0
Financial intermediation	124	2,2	0,0	0,0	0,0	100,0
Real estate and business activities	420	7,7	0,0	0,2	0,4	99,4
Public administration	275	4,9	0,0	0,0	0,3	99,7
Other services	2948	52,9	0,3	0,6	0,5	98,6
Total	5467	100,0	0,3	0,7	0,5	98,4
<i>Total</i>						
Agriculture, hunting, forestry and fishing	321	3,1	5,3	9,4	13,3	72,1
Mining, quarrying and manufacturing	2247	20,8	2,5	4,5	4,9	88,1
Electricity, gas and water supply	105	0,9	0,0	1,0	0,8	98,2
Construction	580	5,6	1,7	11,2	19,1	68,0
Wholesale and retail trade, repairs	1212	12,0	0,9	2,2	2,8	94,1
Hotels and restaurants	201	2,0	0,6	0,6	0,4	98,4
Transport and communication	693	6,7	0,2	1,3	1,2	97,3
Financial intermediation	235	2,1	0,5	0,0	0,0	99,5
Real estate and business activities	978	9,1	0,3	0,7	1,6	97,5
Public administration	613	5,5	0,2	0,4	0,8	98,6
Other services	3675	32,2	0,4	0,9	0,7	98,0
Total	10860	100,0	1,1	2,6	3,3	93,0
<i>Company size</i>						
<i>Male</i>						
0-9	1541	29,8	2,3	6,4	8,6	82,7
10-49	1627	30,3	1,5	4,4	5,3	88,8
50-99	600	11,0	1,9	2,1	4,5	91,5
100-499	1001	18,2	1,3	2,6	3,9	92,3
500 or more	610	10,7	1,9	3,7	5,2	89,2
Total	5379	100,0	1,8	4,3	5,9	88,0
<i>Female</i>						
0-9	1400	26,2	0,1	0,5	0,9	98,4
10-49	2216	40,5	0,3	0,6	0,3	98,7
50-99	669	12,2	0,3	0,6	0,5	98,6
100-499	705	12,8	0,4	1,1	0,2	98,4
500 or more	457	8,3	0,9	1,1	1,2	96,8
Total	5447	100,0	0,3	0,7	0,5	98,4
<i>Total</i>						
0-9	2941	28,1	1,3	3,8	5,2	89,8
10-49	3843	35,2	0,9	2,3	2,5	94,3
50-99	1269	11,6	1,1	1,3	2,5	95,1
100-499	1706	15,6	0,9	2,0	2,4	94,7
500 or more	1067	9,5	1,5	2,6	3,5	92,3
Total	10826	100,0	1,1	2,6	3,3	93,0

Occupation						
<i>Male</i>						
Legislators, senior officials and managers	214	4,0	0,0	0,0	0,4	99,6
Professionals	910	16,3	0,7	0,8	0,3	98,2
Technicians and associated professionals	1192	21,9	0,2	0,9	1,6	97,3
Clerks	314	5,7	0,0	1,2	0,6	98,2
Service workers, shop, market sales workers	343	6,8	0,0	0,9	1,1	98,0
Skilled agricultural and fishery workers	203	3,7	8,5	13,7	18,5	59,3
Craft and related trade workers	1082	20,8	3,7	12,6	17,8	65,9
Plant and machine operators	857	15,8	2,7	3,9	4,3	89,1
Elementary occupations	208	3,9	3,1	4,8	7,4	84,7
Armed forces	46	0,7	..	..	..	..
Occupation unknown	21	0,4	..	..	..	..
Total	5390	100,0	1,8	4,4	5,9	87,9
<i>Female</i>						
Legislators, senior officials and managers	127	2,3	0,0	0,0	0,0	100,0
Professionals	957	17,3	0,3	0,7	0,2	98,8
Technicians and associated professionals	1023	18,3	0,1	0,6	0,2	99,1
Clerks	896	16,5	0,0	0,1	0,4	99,5
Service workers, shop, market sales workers	1660	30,3	0,2	0,5	0,7	98,6
Skilled agricultural and fishery workers	65	1,4	..	..	..	..
Craft and related trade workers	107	2,1	4,7	4,2	1,0	90,1
Plant and machine operators	187	3,5	0,5	4,1	0,9	94,4
Elementary occupations	428	8,1	1,1	0,8	1,1	97,0
Armed forces	0	0,0	..	..	..	..
Occupation unknown	11	0,2	..	..	..	..
Total	5461	100,0	0,3	0,7	0,5	98,4
<i>Total</i>						
Legislators, senior officials and managers	341	3,2	0,0	0,0	0,3	99,7
Professionals	1867	16,7	0,5	0,7	0,3	98,5
Technicians and associated professionals	2215	20,2	0,1	0,8	1,0	98,1
Clerks	1210	10,9	0,0	0,4	0,4	99,2
Service workers, shop, market sales workers	2003	18,1	0,2	0,6	0,8	98,5
Skilled agricultural and fishery workers	268	2,6	6,3	10,3	14,7	68,7
Craft and related trade workers	1189	11,8	3,8	11,9	16,4	68,0
Plant and machine operators	1044	9,9	2,4	4,0	3,7	90,0
Elementary occupations	636	5,9	1,8	2,2	3,3	92,7
Armed forces	46	0,4	..	..	..	..
Occupation unknown	32	0,3	..	..	..	..
Total	10851	100,0	1,1	2,6	3,3	93,0
Employment status						
<i>Male</i>						
Employment on permanent basis	4278	78,6	1,7	3,7	5,0	89,6
Fixed term contract, and temporary employment agency contract	412	8,1	1,0	6,1	7,2	85,8
Apprenticeship or other training scheme	8	0,2	..	..	..	..
Self-employed	674	12,9	2,4	6,9	11,0	79,7
Other	14	0,2	..	..	..	..
Total	5386	100,0	1,8	4,3	5,9	88,0
<i>Female</i>						
Employment on permanent basis	4475	81,4	0,3	0,6	0,5	98,7
Fixed term contract, and temporary employment agency contract	679	12,8	0,8	0,8	0,4	98,0
Apprenticeship or other training scheme	11	0,2	..	..	..	..
Self-employed	268	5,2	0,3	1,9	2,1	95,7
Other	20	0,4	..	..	..	..
Total	5453	100,0	0,3	0,7	0,5	98,4
Employment on permanent basis	8753	80,0	1,0	2,2	2,8	94,0
Fixed term contract, and temporary employment agency contract	1091	10,3	0,9	3,0	3,1	93,0
Apprenticeship or other training scheme	19	0,2	..	..	..	..
Self-employed	942	9,2	1,8	5,5	8,6	84,1
Other	34	0,3	..	..	..	..
Total	10839	100,0	1,1	2,6	3,3	93,0

Risk categories: vibrations at the workplace

The 5 sectors with the highest risk.

According to the categories mentioned in Annex I, NACE-1993.

Sector	Qualitative considerations
<ul style="list-style-type: none"> • 02 Forestry, Logging and related service activities • 10-14 Mining and Quarrying • 50 Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Automotive Fuel • 29 Manufacture of Machinery and Equipment NEC • 	<p>Entries are based on the LFS/WES study and on estimates by experts at the Swedish National Board of Occupational Safety and Health.</p>

The 5 occupations with the highest risk.

According to the categories mentioned in Annex II, ISCO-1988.

Occupation	Qualitative considerations
<ul style="list-style-type: none"> • 72 Metal, machinery and related trades workers • 61 Skilled agricultural and fishery workers • 82 Machine operators and assemblers • 93 Labourers in mining, construction, manufacturing and transport • 71 Extraction and building trades workers 	<p>Entries are based on the LFS/WES study</p> <p>...</p>

Trends: Vibrations at the workplace

The number of workers exposed has over the last 3 - 5 years has remained stable with regard to item "At least 1/4 of time."

Male. 1991 12,8%. 1997 11,4%

Female. 1991 1,5%. 1997 1,7%.

Evaluation of present state: vibrations at the workplace

Preventive actions taken/planned are sufficient to deal with the existing exposure related problems. In this case preventive actions taken/planned are stated to be sufficient. The interpretation should not be that there are no problems to this exposure and that preventive measurements are complete. However this exposure

and its related problems is not included in a category which receive special attention presently.

Comparison of EU-data and national data: Vibrations at the workplace

THE ESWC question and the corresponding Swedish question are similar. The answering scales are similar but not identical.

General overview on the State of Occupational Safety and Health in the EU: Summary Report

The data collection was based on existing data available either at European and/or at the national level and were reported in ESWC-data, 2nd Survey European Foundation Dublin 1996.

Data on occupational health and safety outcome in the Member States

Specific work-related diseases/disorders

Musculoskeletal disorders

Question: 'Does your work affect your health?'

Answers: 'Yes, backache. Yes, muscular pain in arms or legs?'

Source: Second European Survey on Working Conditions (ESWC), 1996

	Sample size		Yes, backache	Yes, muscular pain in arms or legs
	N	%	%	%
Total:	1058	100	32.2	24.6
Gender:	1058			
Male		52.4	28.2	23.8
Female		47.6	36.7	25.4
Age:	1058			
<25 years		9.5	39.0	23.0
25-54 years		73.5	32.0	25.2
≥ 55 years		17.0	29.4	22.8
Sector:	1058			
A-B: Agriculture, hunting, forestry and fishing		2.6	53.6	32.1
C-D: Mining, quarrying and manufacturing		16.9	29.1	30.7
E: Electricity, gas and water supply		1.4	20.0	20.0
F: Construction		5.5	51.7	50.0
G: Wholesale and retail trade, repairs		9.8	29.8	25.0
H: Hotels and restaurants		2.3	41.7	12.5
I: Transportation and communication		5.9	41.9	30.6
J: Financial intermediation		2.7	24.1	13.8
K: Real state and business activities		2.6	14.3	7.1
L: Public administration		12.4	30.5	23.7
M-Q: Other services		37.8	30.8	19.8
Company size:	1032*			
Working alone		5.3	34.5	29.1
1 - 9		14.7	31.6	21.7
10 - 49		18.7	39.4	29.5
50 - 99		6.9	28.2	25.4
100 - 499		12.0	28.2	25.0
≥ 500		42.3	30.9	22.9
Occupation:	1058			
0: Armed forces		0.6	16.7	-
1: Legislators, senior officials and managers		8.3	15.9	13.6
2: Professionals		15.8	22.8	13.8
3: Technicians and associated professionals		19.9	35.1	17.1
4: Clerks		20.5	24.0	24.9
5: Service workers, shop, market sales workers		9.4	32.3	21.2
6: Skilled agricultural and fishery workers		1.4	46.7	46.7
7: Craft and related trades workers		9.4	41.4	41.4

8: Plant and machine operators, assemblers		6.0	56.3	43.8
9: Elementary occupations		8.7	50.0	41.3
Employment status:	1058			
1: Employment on permanent basis		78.7	31.0	24.0
2: Fixed term contract		2.6	40.7	22.2
3: Temporary employment agency contract		9.3	42.9	23.5
4: Apprenticeship or other training scheme		0.4	-	25.0

Other significant results and comparisons

Exposure to vibration and its subsequent ill health effects was the most frequently reported physical risk for which nine Focal Points considered the development of additional preventive actions was required to minimise the risk.

Posture and movement exposures

Posture and movement exposure	European picture workers exposed ^a	Number of Focal Points identifying development of additional preventive action is necessary	Most identified sector(s) ^b	Most identified occupation(s) ^a
Repetitive movements	57%	7	Manufacture of food products and beverages	Machine operators and assemblers
Strenuous working postures	45%	6	Construction	Labourers in mining, construction, manufacturing and transport
Lifting/moving heavy loads	34%	9	Construction	Labourers in mining, construction, manufacturing and transport

Exposure to lifting/moving heaving loads was the most frequently reported posture and movement exposure for which nine Focal Points considered the development of additional preventive actions was required to minimise the risk. This was followed by “Repetitive movements”, for which seven Focal Points in their national report declared the requirement for additional preventive actions.

The sector category “Construction” was reported most at risk from “Strenuous working postures” and “Lifting/moving heavy loads”. Both of which can be affected by ergonomic factors within the workplace. “Manufacture of food products and beverages” was the sector category reported as being most at risk from “Repetitive movements”.

The occupation category “Labourers in mining, construction, manufacturing and transport” was the most frequently reported occupation at risk from “Strenuous working postures” and “Lifting/moving heavy loads”. “Repetitive movements” was the most frequently reported posture and movement exposure affecting the occupation category “Machine operators and assemblers”.

OSH outcomes

OSH outcomes	Number of accidents/european picture workers exposed'	Number of Focal Points identifying development of additional preventive action is necessary	Most identified sector(s)'	Most identified occupation(s)'
Accidents with more than three days absence	4, 757 611 in 1996 (Eurostat data)	7	Construction	Machine operators and assemblers
Fatal accidents	5,549 in 1996 (Eurostat data)	6	Construction	Labourers in mining, construction, manufacturing and transport; drivers and mobile plant operators; extraction and building trades workers
Occupational diseases	No European data	7	Construction	Metal, machinery and related trades workers; labourers in mining, construction, manufacturing and transport
Musculoskeletal disorders	30%	8	Construction	Labourers in mining, construction, manufacturing and transport
Stress	28%	10	Health and social work; education	Life science and health professionals
Occupational sickness absence	25%	5	Health and social work; public administration and defence, compulsory social security	Labourers in mining, construction, manufacturing and transport

In the table above: Musculoskeletal disorders was the second most frequently reported OSH outcome for which eight Focal Points identified the need for the development of additional preventive actions.

The main exposure indicators/ OSH outcomes for which the Focal Points reported that there was a need for developing additional prevention actions to combat the risk are summarised in the table below. Table below:

Exposure indicator/OSH outcome	Number of Focal Points reporting the development of additional preventive action is necessary
Stress	10
Vibration	9
Lifting/moving heavy loads	9
Handling chemicals	8
Musculoskeletal disorders	8

- Statistical data are still scarce, but enough to feel the increase of the relevance of the problem connected to the matter. In fact, for instance, the number of “teleworkers” in the Member States varies from 0.6 - 9% of the working population. Occupational safety and health concerns reported were social isolation, excessive working hours, ergonomic design of the workplace and burden of proof and liability should a case of an accident at home occur. Also, the potential risk for a repetitive strain injury (RSI) was recorded.

Gender: The data collected from the national reports clearly indicates that the male worker was considered most exposed to noise, vibration, high temperature and low temperature. Furthermore, males were considered most at risk to accidents at work which result in more than 3 days absence, to fatal accidents and to occupational diseases. In general, women were considered at risk from repetitive movements and sexual harassment.

The number of Focal Points recording a gender for the exposure indicators/OSH outcomes are presented in the table below.

Exposure indicator/OSH outcome	Number of Focal Points identifying gender at risk	
	Male	Female
Noise	11	0
Vibration	11	0
High temperature	10	0
Low temperature	8	0
Lifting/ moving heavy loads	5	3
Repetitive movements	1	7
Sexual harassment	0	8
Accidents > 3 days absence	13	0
Fatal accidents	12	0
Occupational diseases	9	1

Lack of European Data

The lack of available data and the comparability problems experienced by the Focal Points between the national data and EU data in relation to MSD is evident from the table below, containing extracts of the table presenting an overview with respect to each exposure indicator and OSH outcome identifying the number of Focal Points that were able to make a comparison and those that could not either because of a lack of national data or dissimilarities between the data sets.

	Question 1 "Are there differences between the national data and the data from European sources?"				Question 2 "Does the additional national information highlight sectors or occupations that are not evident from the ESWC-data?"			
	Yes	No	No comparison reported		Yes	No	No comparison reported	
			Lack of National data	Difficulty in comparability of data			Lack of National data	Difficulty in comparability of data
Vibration	3	4	4	4	3	2	6	4

Posture and movement exposures									
Lifting/moving heavy loads	5	2	4	4	4	2	5	4	
Repetitive movements	5	2	4	4	3	2	6	4	
Strenuous working postures	5	2	4	4	3	3	6	3	
OSH outcomes									
Musculoskeletal disorders	2	1	5	7	2	1	8	4	

Also the table below indicates where the national reports contained national data and where there was a short fall for the following risk categories: company size, gender, age and employment status.

Exposures/OSH outcomes	Company size	Gender	Age	Employment status
Vibration	○	●	○	○
Lifting/moving heavy loads	○	●	○	○
Repetitive movements	○	●	○	○
Strenuous working postures	○	○	○	○
Musculoskeletal disorders	○	○	○	○

Legend:

- Data provided in national reports allowed the European picture to be given.
- Data not provided in the national reports and therefore a European picture could not be given.

Exposure indicators/OSH outcomes

Exposure indicator: vibration

Potential health effects	Sympathetic vibration of organs at low frequencies leads to nausea. Whole body vibration leading to low back pain and spinal damage. Hand-arm vibration syndrome affecting blood circulation, nerves muscles and bones in the hands and arms leading to loss of sensation and grip and severe pain in the hands. This includes such conditions as vibration white finger. Psychological effects include loss of concentration, which can cause secondary accidents.
European picture¹⁵	24% of all workers interviewed were exposed to vibration
Sector categories most at risk from the national reports using NACE code¹⁶ Figures in brackets represent the number of Focal Point responses	45 Construction (11); 28 Manufacture of fabricated metal products, except machinery and equipment (9); 14 Other mining and quarrying (6); 60 Land transport: transport via pipelines (6); 01 Agriculture, hunting and related service activities (6); 02 Forestry, logging and related service activities (5).
Occupation categories most at risk from the national reports using ISCO code¹⁷ Figures in brackets represent the number of Focal Point responses	93 Labourers in mining, construction, manufacturing and transport (10); 71 Extraction and building trades workers (10); 83 Drivers and mobile plant operators (10); 72 Metal, machinery and related trades workers (9); 92 Agricultural, fishery and related labourers (6); 82 Machine operators and assemblers (6).
Other risk categories	Gender: For the identified sector and occupation categories male workers were identified by eleven Focal Points to be more at risk from the health effects of vibration in the workplace. Employment status: The self-employed and contractors were considered to be at risk which is supported by the findings from the ESWC survey in which the self-employed were identified as being most at risk.
Trends	The responses in the national reports indicated a variety of observations in relation to the trend of exposure to vibration in the work place. Six Focal Points commented that they had identified a stable trend, four said it had decreased, three reported a decreasing trend and the remaining two were unable to identify any particular trend.
Focal Points identifying the need for additional preventive action	Austria, Belgium, Denmark, Finland, Ireland, Italy, Portugal, Spain and United Kingdom.
Description of indicated action¹⁸	Several Focal Points commented on the need for reducing vibrations at source by preventing the emission of work induced vibrations from hand tools through technical improvements at the design stage.
Other relevant information	Like noise, vibration was considered to be a classical risk in the working environment. A common issue mentioned by the Focal Points was the general lack of awareness in relation to both the health problems posed by vibrating equipment and machinery, particularly that causing whole body vibration and of the controls measures available to eliminate or reduce exposure at source. Exposure to cold weather might be a contributory factor for the increasing severity of the vibration-induced injury.

Exposure indicator: lifting/moving heavy load

Potential health effects	Lifting/moving heavy loads can result in musculoskeletal disorders, in particular damage to the muscles and ligaments of the back, arms and hands.
European picture²⁷	34% of all workers interviewed were exposed to lifting/moving heavy loads.
Sector categories most at risk from the national reports using NACE code²⁸ Figures in brackets represent the number of Focal Point responses	45 Construction (14); 01 Agriculture, hunting and related service activities (9); 85 Health and social work (8); 28 Manufacture of fabricated metal products, except machinery and equipment (6); 20 Manufacture of wood and of products of wood and cork, except furniture; Manufacture of articles of straw and plaiting materials (4); 14 Other mining and quarrying (3).
Occupation categories most at risk from the national reports using ISCO code²⁹ Figures in brackets represent the number of Focal Point responses	93 Labourers in mining, construction, manufacturing and transport (11); 72 Metal, machinery and related trades workers (7); 32 Life science and health associate professionals (6); 71 Extraction and building trades workers (5); 91 Sales and services elementary occupations (5); 82 Machine operators and assemblers (5).
Other risk categories	Gender: Several Focal Points in their national reports commented on the high risk exposure to lifting/moving heavy in the "Health and Social Work" sector, particularly for female workers. Age: Comments made in the national reports identify the younger individuals as being more exposed to carrying out lifting of heavy loads. However, older individuals may be at a greater risk from injury because of the interaction between frequency of exposure and degenerative conditions in the musculoskeletal system.
Trends	Although a limited response, four Focal Points reported a stable trend in the exposure of lifting/moving heavy loads in the workplace. Six Focal Points reported a decreased trend and two Focal Points reported an increased exposure to the risk from lifting/moving heavy loads in the workplace.
Focal Points identifying the need for additional preventive action	Austria, Belgium, Denmark, Finland, Italy, Portugal, Spain, Sweden and United Kingdom.
Description of indicated action ²⁴	No common description could be given.
Other relevant information	Exposure to lifting or moving of heavy loads continues to be a severe safety and health problem at work. The number of workers exposed is considerable and heavy lifts are an important factor contributing to the risk of musculoskeletal disorders. Increased demands on production throughput can result in increasing the speed at which individuals work. In cases where there is a high demand for variety and flexibility concerning the manipulation of goods (for example with packing/wrapping) the work remains mainly manual. In general, it was commented that the manufacturing sector has experienced a decline in handling heavy loads through the implementation of automation, which has included the use of automated equipment. Automation of work activities is expected to decrease the burden caused by lifting heavy loads in many jobs. However, in many female occupations this trend is not likely, because some lifting and moving tasks in the Health and Social Work sector are not easily mechanised.

Exposure indicator: repetitive movements

Potential health effects	Repetitive arm movements can lead to work related upper limb disorders such as tenosynovitis and carpal tunnel syndrome. Tenosynovitis is an inflammation of the thin synovial lining of a tendon sheath usually caused by a mechanical irritation. Carpal tunnel syndrome is a numbness and tingling in the area of distribution of the median nerve in the hand.
European picture²¹	58% of all workers interviewed were exposed to repetitive movements.
Sector categories most at risk from the national reports using NACE code²² Figures in brackets represent the number of Focal Point responses	15 Manufacture of food products and beverages (9); 18 Manufacture of wearing apparel; dressing and dyeing of fur (5); 17 Manufacture of textiles (5); 60 Land transport; transport via pipelines (5); 28 Manufacture of fabricated metal products, except machinery and equipment (3); 19 Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear (3).
Occupation categories most at risk from the national reports using ISCO code²³ Figures in brackets represent the number of Focal Point responses	82 Machine operators and assemblers (11); 93 Labourers in mining, construction, manufacturing and transport (8); 42 Customer services clerks (7); 91 Sales and services elementary occupations (7); 74 Other craft and related trades workers (5).
Other risk categories	Gender: From their national reports seven Focal Points identified females and one Focal Point identified males as being most exposed to repetitive movements at work. Typical female risk activities include assembly of electronic equipment, cashiers in super markets, textile and sewing workers and typists/computer operators. Age: It was reported in several national reports that the younger worker (less than 30 years old) was frequently more exposed to repetitive tasks, particularly young female employees.
Trends	There was no clear indication with respect to the trend in the exposure of repetitive movements in the workplace over the last 3 – 5 years. Three Focal Points reported a stable trend whereas two reported a decreased trend and five reported an increased exposure to repetitive movements in the workplace. Five Focal Points could not establish a particular trend.
Focal Points identifying the need for additional preventive action	Austria, Belgium, Finland, Italy, Portugal, Spain and Sweden.
Description of indicated action ²⁴	No common description could be given.
Other relevant information	Repetitive movements are carried out in many sectors such as agriculture, industry using work equipment, service sector and the financial sector. Repetitive Strain Injuries (RSI) has attracted a great deal of media attention. Repetitive movements combined with a rapid work pace are viewed as important risk factors in RSI. Several Focal Points commented on the rising category of computer related work (key board/mouse operations) requiring special attention.

Exposure indicator: strenuous working postures

Potential health effects	Strenuous working postures can potentially result in many health disorders affecting the bones, muscles and ligaments particularly vulnerable is the back. Also, there is the potential for increased stress levels during work activities involving strenuous postures.
European picture²⁵	45% of all workers interviewed were exposed to strenuous working postures.
Sector categories most at risk from the national reports using NACE code²⁶ Figures in brackets represent the number of Focal Point responses	45 Construction (12); 01 Agriculture, hunting and related service activities (7); 85 Health and social work (5); 93 Other service activities (4); 17 Manufacture of textiles (4); 15 Manufacture of food products and beverages (4).
Occupation categories most at risk from the national reports using ISCO code²⁷ Figures in brackets represent the number of Focal Point responses	93 Labourers in mining, construction, manufacturing and transport (9); 71 Extraction and building trades workers (6); 72 Metal, machinery and related trades workers (6); 92 Agricultural, fishery and related labourers (4); 74 Other craft and related trades workers (4); 61 Water transport (4).
Other risk categories	No common description could be given.
Trends	Although a limited response, five Focal Points reported a decreased trend in exposure to strenuous working postures. Two Focal Points reported a stable trend and a further two reported an increased trend in exposure to strenuous working postures in the workplace. Six Focal Points were unable to establish a particular trend.
Focal Points identifying the need for additional preventive action	Austria, Belgium, Finland, Italy, Spain and Sweden.
Description of Indicated action ²⁸	No common description could be given.
Other relevant information	Strenuous working postures are of significant importance, especially when combined with lifting of heavy loads and repetitious work tasks. Inadequate working posture is a well-known aggravating factor causing disorders of the lower spine. Difficult working positions contribute to the potential risk of work induced musculoskeletal disorders. Musculoskeletal disorders are a common cause of early retirement. Musculoskeletal disorders are a common cause of early retirement. The prevention of strenuous postures in the working environment is related to an appropriate ergonomic design of the workplace, workstation, machinery and work organisation. Assessment of tasks and job rotation is fundamental to reducing the exposure to the risk. The implementation of new provisions on ergonomics for the protection against musculoskeletal disorders calls for more distinct supervisory activities. There is a need for improvement of the technical and organisational measures and of information and training.

OSH outcome: musculoskeletal disorders

Potential health effects	Musculoskeletal disorders can result in injury to the muscular and skeletal systems of the body. Significant work induced musculoskeletal disorders commonly affect the lower back and the hands (tenosynovitis).
European picture²⁶	30% of all workers interviewed were exposed to musculoskeletal disorders
Sector categories most at risk from the national reports using NACE code²⁷ Figures in brackets represent the number of Focal Point responses	45 Construction (7); 01 Agriculture, hunting and related service activities (6); 55 Hotels and restaurants (4); 85 Health and social work (3); 28 Manufacture of fabricated metal products, except machinery and equipment (3); 27 Manufacture of basic metals (3).
Occupation categories most at risk from the national reports using ISCO code²⁸ Figures in brackets represent the number of Focal Point responses	93 Labourers in mining, construction, manufacturing and transport (9); 71 Extraction and building trades workers (6); 91 Sales and services elementary occupations (5); 72 Metal, machinery and related trades workers (5); 92 Agricultural, fishery and related labourers (4); 61 Skilled agricultural and fishery workers (4).
Other risk categories	No common description could be given
Trends	Six Focal Points reported a stable trend in the exposure to musculoskeletal disorders whereas, five reported an increase and one a decreased. Only three Focal Points were unable to establish a particular trend.
Focal Points Identifying the need for additional preventive action	Austria, Belgium, Denmark, Finland, Luxembourg, Portugal, Spain and Sweden.
Description of Indicated action ²⁹	Two Focal Points reported a lack of national data and the need to conduct surveys to collect such information.
Other relevant information	Musculoskeletal disorders are a major source of occupational injuries in the working environment. Occupational exposure to musculoskeletal disorders is one potential source that can result in an injury. Current lifestyles including healthy living, recreational and sporting activities also have a much more important causal connection, thereby contributing to the difficulty in establishing those that are solely attributable to workplace conditions. Repetition and monotony combined with working conditions such as low individual control of the work and high work pace can also lead to an increase in the risk of musculoskeletal disorders. It is expected that still more and better mechanical lifting aids will be developed in the future. The prevalence of musculoskeletal disorders among the active and younger age categories does not reflect the impact of work related symptoms in the oldest age group.

One fundamental element can be put as a result of the analysis of the European members data: it can be stated that, generally speaking, most of the countries do not have updated and significant statistical data regarding Work-related Musculoskeletal Disorders.

If, in some cases, we might have random quantitative data they do not cover a meaningful range of time, and since they haven't been repeated over a certain amount of time, so to become comparable, thus, little inferences and interpretation of those data can be made.

Prevention

The OSH report identified a list of themes associated with emerging risks, meriting the need for further preventive actions: here are reported those linked with MSD.

Ergonomics.	<i>Manual handling</i> was identified as being of significant concern. Moving of heavy or awkward loads in the workplace poses a serious risk to employees and should be automated where possible or work practices changed to reduce the need to move and handle loads, for example good workplace layout. Peoples' backs are often most at risk from moving and handling. An example of this in the workplace is unloading of a truck by hand when it may be done using a fork lift truck.
Sector research.	<i>Health and social work</i> was identified as a sector with research needs. The main concerns within this area of work are lone working, temporary workers and manual handling.
Particularly sensitive risk groups	<i>Older workers</i> were also identified as a significant concern as a particular sensitive risk group. Older workers may have inherent muscular problems, which can reduce their ability to lift or move objects. Also, they may have an increased sensitivity to extremes of temperature and slower reflexes.
Ergonomics.	<i>Repetitive strain</i> was identified as being of significant concern. Repetitive strain injuries are caused when movements are repeated excessively by particular parts of the body for long periods of time. Examples of tasks vulnerable to this risk include typing, computer related work and checkout operators moving items across a scanner.

The above mentioned areas are, with no doubt, interesting to be investigated, even to identify possible educational activities as well as information activities. Even though apparently not directly connected to work related MSD we think that it is important to consider the following group of workers at risk:

Particularly sensitive risk groups	<i>Young workers</i> are defined as people under the age of 18. They are considered to be an "at risk" group as they are deemed to be unfamiliar with the hazards present in the workplace. They often lack the experience of workplaces to safely deal with risks in comparison to adults. Their perception of risk can also vary from that of a mature worker.
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Preventive actions may range from the introduction of new legislation through to awareness campaigns, surveys, field inspections, published information such as guidance notes or codes of practice or general information leaflets. Also, such preventive actions may either be applied in a focused manner to a specific industrial sector and its associated processes or they can be applied in a broad approach covering many sectors and processes.

Much of the problem linked with MSDs could be prevented or reduced by following existing health and safety regulations and guidance on good practice. Unless effective steps are taken the toll of workers suffering will increase along with the costs to industry. Therefore many employers want to know how to introduce effective measures in practice.

Across the European Union Member States a common set of directives aimed at preventing health and safety risks in the workplace apply. An important role of the European Agency for Safety and Health at Work is to gather and make available

information that will support and promote the prevention of work related ill health. This includes assisting and stimulating the sharing of information to solve common problems.

Publications by the European Agency for Safety and Health at work and the Agency's web site aim to show that work-related musculoskeletal problems can be solved in many ways.

They provide real examples of how companies and organisations have made interventions and sought to reduce musculoskeletal disorders at work.

Each type of industry and workplace has its own conditions, that can also vary between Member States.

Therefore work practices and solutions to problems must be matched to the particular situation by carrying out an assessment of the risks at the actual workplace concerned. Nevertheless, many musculoskeletal problems are not unique and solutions can be relevant and transferable across various sectors, types and sizes of enterprises.

There is even an European prevention approach (Based on "Framework" Directive 89/391 article 6.2)

- Avoid MSD risks;
- evaluate MSD risks that can not be avoided;
- combat the MSD risks at source;
- adapt the work to the individual, especially the design of workplaces, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate and to reduce their effect on health;
- adapt to technical progress;
- replace the dangerous by the non-dangerous or less dangerous;
- develop a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors related to the working environment;
- give collective protective measures priority over individual protective measures • give appropriate instructions to workers.

For instance, it is possible to avoid RSIs by taking frequent mini-breaks from the computer, improving their work posture, and establishing workstation environments that contribute to better posture.

Ergonomics

There is much interest to develop and sustain an Ergonomic Evaluation Process, driven by management and employees, that identifies, analyses and implements

controls that reduce and/or eliminate Muscularskeletal Disorders in turn increasing productivity and operational efficiency.

Coupled with a concern for employee health, employer liability issues heighten the interest in ergonomics and the possible market implications of ergonomic products. Ergonomics combines product engineering, psychology, and medicine to improve human performance and health.

Adjustments must by law be made available to people who use video display terminals and keyboards intensively for more than a certain number (variable in each Country) of hours a day.

Until recently, advanced ergonomic systems have been kept from wider implementation by their higher cost, limited supply, and lack of standards and testing. However, the growing demands for adjustable usage and ever smaller systems are breaking down these barriers.

Significant technological advancements are taking place today, despite the current economic recession. Ergonomic office equipment and accessories represent the cutting edge of product design with great potential for business opportunity.

The design of today's office equipment is becoming a major factor in the design and manufacture of the total system.

Who could be interested in such analysis? Decision-makers who need strategic planning data on ergonomic office products and devices, together with information on the manufacturers, industry and markets. Some examples:

- electronic office equipment suppliers
- manufacturers of personal computers, and peripherals--keyboards, mouses, monitors
- manufacturers of office equipment and furniture--desks, tables, chairs and printers
- manufacturers of computer and furniture accessories: keyboard storage drawers; wrist rests; back support lumbar rolls; footrests; workstation retrofits; tilttable screen arms; antiglare hoods; and other products
- companies that use computers and workstations
- rehabilitation and physical therapy professionals
- insurance companies
- information industry companies -- publishing, advertising, etc.
- government agencies, state agencies
- electronic and electrical equipment manufacturers

Vocational rehabilitation

Techniques and strategies

What are, if any, the techniques and strategies to face MSDs?

The great majority of people experiencing symptoms of RSI type conditions usually go on to make a recovery – if they follow the right course of action.

Five activities are usually identified, all of them equally important:

1 Avoiding of the risk of any further damage

This, of course, is the first step, to avoid a worsening of the condition, which could lead to long-term injury. Not only working activities, but also those performed at home should be analysed. It is important to focus on those activities which involve using hands and arms and lifting and carrying loads: driving, carrying shopping, gardening and housework can counteract treatment.

2 A full and accurate diagnosis of the condition/s affecting the patient

The diagnosis of musculoskeletal disorders is of course important to administer the appropriate treatment.

3 An appropriate treatment to clear the blockage

Unfortunately there is no set treatment which works for everyone (unlike a plaster cast on a broken arm) – each case must be considered individually. Initially usually physiotherapy is the correct treatment. Then further solutions can be: osteopathy, chiropractic, deep tissue massage, acupuncture, anti-inflammatory (temporarily) etc.

4 Activities to stimulate blood flow

These include healthy eating with plenty of fresh fruit and vegetables, drinking two litres of water a day and regular exercise. Alcohol consumption should be kept within reasonable limits and smoking should be stopped or cut down as it restricts circulation and is a further risk factor.

5 Return to work slowly

If possible, a gradual re-introduction to work is advisable. This may involve either returning to work on a part time or reduced hour basis. During the initial period, it is important to increase rest breaks and to reduce workload.

Functional Capacity Evaluation (FCE)

FCEs are generally requested by insurance companies who are paying illness insurance.

FCEs have been used to determine the abilities of a person who has been "injured" and, as such, more commonly measure physical ability in such conditions as "back pain" or RSI.

Medical evidence from GPs and consultants (considered "subjective" evidence) has some place in the evaluation of MSD and it is better, in case of litigation, that the expert opinion is supported with reliability and validity research (considered "objective evidence"), published in a peer-reviewed journal.

Changing careers

In some countries there are agencies that can help persons with this process, often via counselling and isometric testing. Unfortunately this solution is expensive since these agencies generally work with managers or executives being paid for by their employer.

In general, it is possible to say that no specific action in Vocational rehabilitation are taken to solve MSDs. Much better seems the situation related to the prevention of these disorders. In the major rehabilitation centres physiotherapists organise the so called "back schools" where people are taught to prevent back ache.

When a person has a serious MSD almost ever will have to change completely career, since it is almost impossible to recovery when the situation is serious. In this case, again, non specific vocational training will be performed, and the person will undergo general vocational counselling.

When the employer has the possibility, the person will be moved to a lighter work. It is not clear what may happen when the damage is at the neck, shoulder, elbow, wrist level. Interesting checklists for health at a computer workstation have been defined, but, once again, this is more linked with prevention than with Vocational Rehabilitation.

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