Online Supplementary Material

Predicting forearm physical exposures during computer work using self-reports, software-recorded computer usage patterns, and anthropometric and workstation measurements

M.A. Huysmans[a,b], B.H.W. Eijckelhof[a,b], J.L. Bruno Garza[c], P. Coenen[a,d], B.M. Blatter[b,e], P.W. Johnson[f], J.H. van Dieën[b,g], A.J. van der Beek[a,b], J.T. Dennerlein[a,c,h]

a) Department of Public and Occupational Health and Amsterdam Public Health research institute, VU University Medical Center, Amsterdam, The Netherlands
(b) Body@Work Research Center on Physical Activity, Work and Health, TNO-VU/VUmc, Amsterdam, The Netherlands
(c) Department of Environmental Health, Harvard University, Boston, U.S.A.
(d) School of Physiotherapy and Exercise Science, Curtin University, Perth, Australia.
(e) Netherlands Organisation for Applied Scientific Research, TNO, Hoofddorp, The Netherlands
(f) Department of Environmental and Occupational Health Sciences, University of Washington, Seattle, U.S.A.
(g) MOVE Research Institute Amsterdam, Faculty of Human Movement Sciences, VU University Amsterdam, Amsterdam, The Netherlands
(h) Department of Physical Therapy, Movement, and Rehabilitation Sciences, Bouvé College of Health Sciences, Northeastern University, 360 Huntington Avenue, Boston, USA.

Authors' email addresses:
Maaike A Huysmans: m.huysmans@vumc.nl
Belinda HW Eijckelhof: eijckelhof.l@hsleiden.nl
Jennifer L Bruno Garza: garza@uchc.edu
Pieter Coenen: p.coenen@vumc.nl
Birgitte M Blatter: b.blatter@veiligheid.nl
Peter W Johnson: petej@u.washington.edu
Jaap H van Dieën: j.van.dieen@vu.nl
Allard J van der Beek: a.vanderbeek@vumc.nl
Jack T Dennerlein: j.dennerlein@neu.edu

Corresponding Author:
Dr. M.A. Huysmans
VU University Medical Center - Department of Public and Occupational Health
PO Box 7057
1007 MB Amsterdam
The Netherlands
E mail: m.huysmans@vumc.nl
Tel: +31 20 444 8172
Fax: +31 20 444 8387

Part 1

Results of each of the final models (beta, standard error and p-values) from the full data set, as well as from the bootstrapping procedure.

*Wrist muscle activity (%MVC) - l*eft ECR

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
16	-.121	.060	.046	-.121	.051	.015
7	.080	.039	.044	.080	.036	.030
28	-.880	.376	.021	-.880	.330	.009
38	-.999	.505	.051	-.999	.492	.040
41	-.540	.187	.005	-.540	.194	.006
46	7.291	1.614	.000	7.291	1.734	.001
58	.500	.288	.086	.500	.297	.091
63	.667	.313	.036	.667	.376	.072
65	.595	.209	.005	.595	.240	.015
75	-1.109	.552	.047	-1.109	.554	.037
R^2=0.415 RMS=1.765						

*Wrist muscle activity (%MVC) - r*ight ECR

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
16	-.183	.084	.032	-.183	.085	.039
1	-.073	.022	.001	-.073	.023	.002
20	-.093	.030	.003	-.093	.029	.004
25	1.060	.402	.010	1.060	.350	.003
39	-1.326	.774	.090	-1.326	.797	.092
45	.454	.162	.006	.454	.174	.016
52	.150	.072	.039	.150	.074	.049
76	-.696	.238	.004	-.696	.251	.011
103	-1.085	.536	.045	-1.085	.497	.030
R^2=0.350 RMS=2.447						

Wrist Posture (degrees) - left flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
6	1.831	.780	.021	1.831	.837	.029
7	.524	.225	.022	.524	.213	.007
42	3.718	1.455	.012	3.718	1.479	.017
75	-6.413	3.240	.050	-6.413	2.183	.006
R^2=0.162 RMS=10.560						

Wrist Posture (degrees) - left radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
8	-.565	.225	.014	-.565	.242	.035
18	3.953	1.551	.012	3.953	1.676	.029
19	2.971	1.187	.014	2.971	1.102	.010
22	6.071	2.502	.017	6.071	2.107	.005
25	-2.172	1.264	.089	-2.172	1.877	.261
36	-3.817	1.577	.017	-3.817	1.356	.009
46	27.213	6.985	.000	27.213	6.845	.001
88	-.136	.069	.051	-.136	.068	.050
76	1.642	.726	.026	1.642	.854	.077
R^2=0.341 RMS=7.740						

Wrist Posture (degrees) - right flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
42	3.880	1.442	.008	3.880	1.711	.029
48	-23.387	12.089	.056	-23.387	13.124	.082
87	-.326	.147	.029	-.326	.188	.088
91	-.359	.206	.083	-.359	.199	.068
74	4.001	2.054	.054	4.001	2.022	.058
75	-7.101	3.406	.039	-7.101	3.204	.027
104	2.686	1.134	.020	2.686	1.068	.022
R^2=0.228 RMS=10.551						

Wrist Posture (degrees) - right radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
1	.202	.059	.001	.202	.079	.010
42	-2.092	.987	.036	-2.092	1.182	.082
47	-10.567	5.815	.072	-10.567	6.502	.115
56	.036	.023	.117	.036	.018	.058
81	-.152	.068	.027	-.152	.060	.009
R^2=0.185 RMS=6.890						

*Wrist velocity (degrees/s) - l*eft flexion-extension

		Not bootstrapped			Bootstrapped		
Variable name	Variable nr.	B	SE	p-val	B	SE	p-val
MHandBreadth	15	.306	.165	.067	.306	.484	.029
cntrct	18	-2.547	1.004	.013	-2.547	.918	.005
muist	33	-.522	.237	.030	-.522	.251	.045
belas	63	2.201	.865	.012	2.201	.665	.001
ander	103	-3.119	1.073	.004	-3.119	1.028	.005
R^2=0.238 RMS=5.120							

*Wrist velocity (degrees/s) - l*eft radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
13	-.395	.132	.003	-.395	.139	.010
6	.413	.218	.060	.413	.253	.117
20	-.059	.035	.097	-.059	.035	.093
78	-2.664	1.175	.025	-2.664	1.319	.049
88	-.074	.025	.005	-.074	.021	.001
90	-.080	.034	.022	-.080	.043	.025
R^2=0.264 RMS=2.846						

Wrist velocity (degrees/s) - right flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
15	1.054	.227	.000	1.054	.820	.001
24	-5.420	2.552	.036	-5.420	2.933	.060
26	2.420	.974	.015	2.420	1.379	.084
41	-1.646	.690	.019	-1.646	.699	.027
46	11.073	6.296	.082	11.073	5.833	.055
81	-.149	.069	.033	-.149	.080	.070
100	-.940	.385	.016	-.940	.385	.023
103	-3.923	1.450	.008	-3.923	1.331	.003
R^2=0.378 RMS=6.776						

Wrist velocity (degrees/s) - right radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
12	.296	.075	.000	.296	.109	.006
13	-1.041	.186	.000	-1.041	.281	.001
14	.057	.022	.010	.057	.295	.011
15	-.209	.119	.083	-.209	.390	.061
20	-.083	.040	.040	-.083	.042	.043
27	1.645	.516	.002	1.645	.596	.008
43	-1.726	.971	.079	-1.726	1.086	.097
47	-10.218	3.242	.002	-10.218	3.354	.005
48	-10.691	4.375	.016	-10.691	4.923	.039
57	.587	.294	.048	.587	.285	.049
65	.840	.346	.017	.840	.344	.024
87	.086	.045	.059	.086	.048	.079
91	.117	.064	.070	.117	.061	.061
103	-1.784	.685	.011	-1.784	.724	.028
R^2=0.556 RMS=3.189						

Wrist acceleration (degrees/s2) - left flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
13	-11.739	3.820	.003	-11.739	4.133	.006
2	-48.652	17.498	.006	-48.652	17.051	.007
18	-40.524	14.184	.005	-40.524	13.369	.005
19	-18.997	10.900	.084	-18.997	13.005	.158
33	-5.570	3.563	.121	-5.570	3.196	.088
38	-26.343	20.050	.192	-26.343	27.517	.335
54	12.320	4.196	.004	12.320	4.056	.008
63	38.967	12.349	.002	38.967	7.597	.001
103	-41.476	15.234	.008	-41.476	13.760	.004
R^2=0.383						
						RMS=71.112

Wrist acceleration (degrees/s2) - left radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
13	-5.501	1.627	.001	-5.501	1.746	.001
28	-15.258	7.562	.046	-15.258	8.014	.075
46	88.517	32.262	.007	88.517	32.859	.011
53	-.879	.515	.091	-.879	.529	.099
54	4.887	2.130	.024	4.887	1.978	.016
78	-26.229	15.359	.091	-26.229	18.289	.159
86	.088	.051	.089	.088	.996	.106
88	-.965	.316	.003	-.965	.267	.002
90	-1.142	.433	.010	-1.142	.481	.004
R^2=0.379						
RMS=35.139						

Wrist acceleration (degrees/s2) - light flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
13	-19.560	5.786	.001	-19.560	5.988	.004[b]
15	7.994	3.854	.041	7.994	14.733	.039[b]
2	-61.447	26.701	.023	-61.447	27.899	.031[b]
18	-40.262	20.928	.057	-40.262	21.540	.067[b]
24	-94.271	37.881	.014	-94.271	41.121	.022[b]
26	32.589	14.496	.027	32.589	22.292	.146[b]
41	-29.650	10.892	.008	-29.650	11.191	.019[b]
46	183.978	96.681	.060	183.978	96.264	.068[b]
54	15.143	5.751	.010	15.143	6.455	.022[b]
80	7.109	3.403	.039	7.109	3.610	.060[b]
100	-14.993	6.294	.019	-14.993	6.004	.016[b]
101	39.304	23.741	.101	39.304	25.204	.119[b]
103	-60.471	21.385	.006	-60.471	19.168	.002[b]
R^2=0.516						
RMS=99.952						

Wrist acceleration (degrees/s2) - right radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
12	2.835	.923	.003	2.835	1.487	.062
19	21.494	7.878	.007	21.494	7.843	.011
47	-266.551	50.539	.000	-266.551	56.598	.001
48	-319.535	66.184	.000	-319.535	68.665	.001
57	9.606	4.817	.049	9.606	5.137	.068
65	14.297	5.789	.015	14.297	6.379	.039
R^2=0.387 RMS=54.482						

Force (%MVF) - keyboard

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
10	-.010	.004	.010	-.010	.004	.029
14	.076	.004	.000	.076	.045	.001
67	-.234	.090	.010	-.234	.082	.016
103	-.245	.118	.041	-.245	.089	.014
R^2=0.796 RMS=0.565						

Force (%MVF) - mouse

	Not bootstrapped			Bootstrapped		
Variable nr.	B	SE	p-val	B	SE	p-val
10	-.011	.003	.000	-.011	.004	.009
35	-.158	.090	.083	-.158	.077	.056
46	-1.832	.392	.000	-1.832	.434	.001
49	-.015	.007	.023	-.015	.008	.048
57	.120	.040	.003	.120	.044	.020
64	-.173	.079	.031	-.173	.087	.061
79	.069	.014	.000	.069	.030	.018
84	-.045	.014	.001	-.045	.015	.007
104	.134	.047	.006	.134	.051	.014
R^2=0.477 RMS=0.437						

Part 2

Results of each of the final practical models (beta, standard error and p-values) and results from the bootstrapping procedure.

*Wrist muscle activity (%MVC) - l*eft ECR

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
2	.793	.387	.043	.793	.379	.043
7	.082	.038	.035	.082	.036	.029
28	-.879	.375	.021	-.879	.341	.014
38	-.965	.499	.056	-.965	.488	.046
41	-.557	.184	.003	-.557	.200	.011
46	7.145	1.617	.000	7.145	1.843	.001
58	.480	.285	.095	.480	.290	.110
63	.640	.311	.042	.640	.375	.081
65	.605	.207	.004	.605	.233	.019
75	-1.186	.553	.034	-1.186	.565	.033
103	-.664	.372	.077	-.664	.363	.071
R^2=0.435 RMS=1.742						

*Wrist muscle activity (%MVC) - r*ight ECR

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
1	-.070	.022	.002	-.070	.024	.002
20	-.090	.031	.004	-.090	.028	.001
25	.994	.409	.017	.994	.369	.012
45	.454	.165	.007	.454	.179	.018
52	.146	.073	.049	.146	.072	.047
71	1.001	.564	.079	1.001	.528	.058
76	-.620	.239	.011	-.620	.248	.021
103	-1.196	.539	.029	-1.196	.518	.029
R^2=0.361 RMS=2.514						

Wrist Posture (degrees) - left flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
6	1.831	.780	.021	1.831	.837	.029
7	.524	.225	.022	.524	.213	.007
42	3.718	1.455	.012	3.718	1.479	.017
75	-6.413	3.240	.050	-6.413	2.183	.006
R^2=0.162 RMS=10.560						

Wrist Posture (degrees) - left radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
76	2.094	.738	.005	2.094	.902	.038
19	3.825	1.189	.002	3.825	1.039	.001
22	4.495	2.506	.076	4.495	2.173	.044
25	-3.586	1.368	.010	-3.586	2.452	.154
36	-4.129	1.587	.011	-4.129	1.471	.008
46	23.324	7.015	.001	23.324	6.554	.003
57	-1.970	.744	.009	-1.970	.995	.057
R^2=0.297 RMS=7.918						

Wrist Posture (degrees) - right flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
42	4.026	1.478	.007	4.026	1.787	.034
48	-24.939	12.211	.043	-24.939	12.377	.038
74	3.827	2.093	.070	3.827	1.951	.049
75	-6.750	3.351	.046	-6.750	2.654	.017
104	2.566	1.162	.029	2.566	1.041	.017
R^2=0.173 RMS=10.820						

Wrist Posture (degrees) - right radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
1	.177	.061	.004	.177	.078	.024
10	-.083	.048	.087	-.083	.044	.071
25	-2.106	1.099	.058	-2.106	1.852	.274
42	-2.050	.995	.042	-2.050	1.013	.051
56	.044	.023	.056	.044	.020	.024
R^2=0.176 RMS=6.928						

*Wrist velocity (degrees/s) - l*eft flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
18	-2.757	1.008	.007	-2.757	.942	.004
33	-.474	.238	.049	-.474	.258	.071
63	2.110	.873	.017	2.110	.736	.005
103	-3.230	1.083	.004	-3.230	1.050	.007
R^2=0.214 RMS=5.177						

*Wrist velocity (degrees/s) - l*eft radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
23	1.872	.695	.008	1.872	.756[b]	.017[b]
72	-2.107	1.229	.089	-2.107	.582[b]	.002[b]
R^2=0.079 RMS=3.143						

Wrist velocity (degrees/s) - right flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
7	.257	.151	.090	.257	.179	.165
18	-3.161	1.468	.034	-3.161	1.548	.047
24	-6.052	2.712	.028	-6.052	2.790	.027
26	1.843	1.040	.079	1.843	1.398	.204
41	-2.316	.759	.003	-2.316	.797	.009
46	14.748	6.636	.028	14.748	7.080	.039
54	.770	.405	.060	.770	.453	.098
75	-4.637	2.230	.040	-4.637	2.758	.103
103	-3.863	1.517	.012	-3.863	1.467	.014
R^2=0.317 RMS=7.138						

Wrist velocity (degrees/s) - right radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
2	2.647	.795	.001	2.647	.858	.003
31	-.392	.152	.011	-.392	.163	.022
36	2.908	.763	.000	2.908	.807	.001
43	-2.274	1.080	.038	-2.274	1.243	.052
47	-15.366	3.504	.000	-15.366	4.744	.005
48	-17.183	4.629	.000	-17.183	5.287	.003
57	.899	.332	.008	.899	.348	.012
R^2=0.341 RMS=3.754						

Wrist acceleration (degrees/s2) - left flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
4	-24.275	10.354	.021	-24.275	14.216	.057
33	-9.006	3.589	.014	-9.006	3.519	.015
38	-38.509	21.050	.070	-38.509	24.816	.135
48	-154.627	86.748	.078	-154.627	95.460	.116
54	14.679	4.407	.001	14.679	4.096	.001
63	34.458	13.177	.010	34.458	10.544	.001
103	-45.970	15.676	.004	-45.970	14.537	.001
R^2=0.313 RMS=74.353						

Wrist acceleration (degrees/s2) - left radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
9	-.732	.300	.016	-.732	.232	.005
4	-11.190	5.202	.034	-11.190	5.187	.023
23	18.558	8.399	.029	18.558	7.930	.015
46	88.361	33.321	.009	88.361	35.560	.014
54	5.516	2.154	.012	5.516	2.556	.033
72	-27.183	15.107	.075	-27.183	8.909	.007
R^2=0.229 RMS=37.804						

Wrist acceleration (degrees/s2) - light flexion-extension

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
2	-41.253	23.715	.085	-41.253	25.032	.113
18	-48.509	23.159	.039	-48.509	24.444	.050
24	-91.122	41.194	.029	-91.122	42.638	.018
41	-38.598	11.734	.001	-38.598	12.935	.010
48	-335.196	127.082	.010	-335.196	139.714	.021
54	18.628	6.235	.003	18.628	6.730	.004
100	-15.560	6.720	.023	-15.560	6.499	.016
101	57.970	25.795	.027	57.970	27.871	.048
103	-75.400	23.258	.002	-75.400	21.006	.001
R^2=0.379 RMS=111.033						

Wrist acceleration (degrees/s2) - right radial-ulnar deviation

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
3	-27.906	15.867	.081	-27.906	11.021	.012
19	22.413	8.107	.007	22.413	7.538	.006
47	-277.478	51.780	.000	-277.478	67.006	.001
48	-311.209	68.454	.000	-311.209	74.633	.001
57	12.284	5.015	.016	12.284	5.467	.027
65	14.489	5.953	.017	14.489	7.242	.050
R^2=0.351 RMS=56.029						

Force (%MVF) - keyboard

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
10	-.015	.008	.072	-.015	.010	.224
67	-.360	.190	.060	-.360	.169	.135
R^2=0.053 RMS=1.208						

Force (%MVF) - mouse

	Not bootstrapped			Bootstrapped		
Variable nr	B	SE	p-val	B	SE	p-val
10	-.009	.003	.012	-.009	.004	.025
35	-.203	.099	.043	-.203	.092	.047
46	-1.103	.604	.071	-1.103	.634	.110
47	1.315	.569	.023	1.315	.567	.023
57	.082	.043	.059	.082	.046	.105
64	-.178	.089	.049	-.178	.096	.097
104	.113	.052	.032	.113	.050	.043
R^2=0.340 RMS=0.486						

Part 3

Self-reported factors (S-rep), software-recorded computer usage patterns (SW-rec), and additional worksite measurements of anthropometrics and workstation set-up (AWM).

Individual factors

S-rep 1. Age (mean=40 years, standard deviation=11.6 years)

S-rep 2. Gender (male=28%/female=72%)

S-rep 3. Handedness (right=87%/left=13%)

S-rep 4. Education level (none or primary only=2%/lower vocational only=0%/secondary or vocational only=4%/secondary=8%/higher education=86%)

S-rep 5. Number of years working for current company (mean=8.5 years, standard deviation=8.4 years)

S-rep 6. Number of years of daily computer use at work (shorter than 1 year=8%/1-2 years=11%/2-5 years=20%/5-10 years=20%/>10 years=41%)

S-rep 7. Coping (*DeVries et al. 1995, 14 question scale, range 14-56,* mean=35, standard deviation=5)

S-rep 8. Over-commitment (*Siegrist et al. 2004, 11 question scale, range 0-18*, mean=7, standard deviation=3)

S-rep 9. Self-reported height (mean=175 cm, standard deviation=12.3 cm)

AWM 10a. Measured weight (mean=73 kg, standard deviation=14.7)

S-rep 10b. Self-reported weight (mean=71 kg, standard deviation=14.0)

AWM 11a. Calculated body mass index, using measured weight (mean=24 kg/m^2, standard deviation=7.4 kg/m^2)

S-rep 11b. Calculated body mass index, using self-reported weight (mean=24 kg/m^2, standard deviation=8.0 kg/m^2)

AWM 12. Measured arm length, acromion to radiale (mean=56 cm, standard deviation=5.6 cm)

AWM 13. Measured forearm length, radiale to stylion (mean=25 cm, standard deviation=2.1 cm)

AWM 14. Measured hand length, distal wrist crease to dactylion (mean=19 cm, standard deviation=13.9 cm)

AWM 15. Measured hand breadth, between metacarpale II and V (mean=7.7 cm, standard deviation=0.65 cm)

AWM 16. Measured shoulder breadth, acromion to acromion (mean=37 cm, standard deviation=2.9 cm)

Job characteristics

S-rep 17. Job title (secretary=8%/other supporting employee=19%/other=73%)

S-rep 18. Working on a temporary contract (yes=41%/no=59%)

S-rep 19. Number of working days per week (mean=4 days, standard deviation=1 day)

S-rep 20. Number of working hours in contract per week (mean=32 hours, standard deviation=8 hours)

S-rep 21. Supervising people (yes=10%/no=90%)

S-rep 22. Working with hands above shoulder height during work (often=10%/seldom or never=90%)

S-rep 23. Lifting or carrying >5kg at work(often=2%/once in a while=14%/seldom or never=84%)

S-rep 24. Firmly squeezing with hands at work (often=8%/seldom or never=92%)

S-rep 25. Repetitive tasks at work excluding computer use (seldom or never=81%/once in a while=11%/often=8%)

S-rep 26. Precision mouse work (hardly ever=76%/0-1 hours per day=17%/1-2 hours per day=4%/2-4 hours per day=3%/>4 hours/day=0%)

S-rep 27. Frequency of using computer and telephone at the same time at work (never=55%/sometimes=38%/often=7%/always=0%)

S-rep 28. Increase in daily computer use during past year (yes=32%/no=68%)

Computer work behavior

S-rep 29. Use of more than one computer at the same time during computer work (no=79%/sometimes=13%/regularly=4%/often=4%)

S-rep 30. Total computer use hours per day at work (hardly ever=0%/0-1 hours per day=0%/1-2 hours per day=0%/2-4 hours per day=9%/4-6 hours per day=37%/6-8 hours per day=53%/>8 hours per day=1%)

S-rep 31. Total computer use hours per day while working at home (never=28%/hardly ever=7%/0-1 hours per day=9%/1-2 hours per day=11%/2-4 hours per day=7%/4-6 hours per day=18%/6-8 hours per day=15%/>8 hours per day=4%)

S-rep 32. Mouse use hours per day at work (hardly ever=1%/0-1 hour per day=9%/1-2 hours per day=24%/2-4 hours per day=40%/4-6 hours per day27%/6-8 hours per day=0%/>8 hours per day=0%)

S-rep 33. Mouse use hours per day while working at home (never=28%/hardly ever=14%/0-1 hour per day=12%/1-2 hours per day=15%/2-4 hours per day=12%/4-6 hours per day=9%/6-8 hours per day=8%/>8 hours per day=1%)

S-rep 34. Use of break and reminder software (yes=6%/no=94%)

S-rep 35. Performs stretch exercises during computer work (never=69%/sometimes, often, or always=31%)

S-rep 36. Often works for >1 hour without 5 min break (yes=62%/no=38%)

S-rep 37. Frequency of short (<5 min) breaks during computer use (hardly ever=17%/once in a while=18%/sometimes=31%/regularly=34%)

S-rep 38. Forward chin movement while looking at the monitor (yes=86%/no=14%)

S-rep 39. Supports elbow, wrist, or forearm during keyboard use (yes=90%/no=10%)

S-rep 40. Supports elbow, wrist, or forearm during mouse use (yes=96%/no=4%)

S-rep 41. Able to touch type (yes=37%/no, look at keyboard=13%/no, look at screen and keyboard=50%)

S-rep 42. Number of fingers used for typing (1-2=16%/3-9=47%/10=37%)

S-rep 43. Mouse handedness (right=89%/left=3%/both=8%)

S-rep 44. Mouse motor control strategy (hand only=46%/lower arm only=22%/hand and arm=31%/no movement required=1%)

S-rep 45. Sitting posture (a little bent forward=32%/straight up with back on chair=29%/straight up without back on chair=14%/bent back=6%/variable=19%)

SW-rec 46. Measured percentage keyboard use (mean=22%, standard deviation=11%)

SW-rec 47. Measured percentage mouse use (mean=42%, standard deviation=11%)

SW-rec 48. Measured percentage idle time (mean=37%, standard deviation=9%)

Psychosocial factors

S-rep 49. Number of overtime hours per week (mean=4.4 hours per week, standard deviation=6.5 hours per week)

S-rep 50. Work continuation during formal breaks (yes=49%/no=51%)

S-rep 51. Task variation (*5 question scale, range 0-12,* mean=8, standard deviation=2)

S-rep 52. Effort (*Siegrist et al. 2004, 5 question scale, range 0-20*, mean=6, standard deviation=3)

S-rep 53. Reward (*Siegrist 2004, 11 question scale, range 0-20*, mean=8, standard deviation=2)

S-rep 54. Decision authority (*Karasek 1998, 3 question scale, range 0-9,* mean=7, standard deviation=2)

S-rep 55. Perceived stress (*Cohen et al. 1983, 4 question scale, range 0-12,* mean=5, standard deviation=2)

S-rep 56. Need for recovery (*Veldhoven and Broersen 2003, Sluiter et al. 1999, 12 question scale, range 0-12,* mean=4, standard deviation=3)

S-rep 57. Number of deadlines in past 3 months (0=16%/1=14%/1-3=36%/>3=34%)

S-rep 58. Current job satisfaction (never=2%/sometimes=10%/often=63%/always=25%)

S-rep 59. Job satisfaction over the past 3 months (never=1%/sometimes=19%/often=64%/always=16%)

S-rep 60. Increased time pressure in the last 3 months (no=50%/yes for a short time=11%/yes for a longer time=39%)

S-rep 61. Burdened by increased time pressure in the last 3 months (no=56%/moderately=27%/rather=16%/very=1%)

S-rep 62. Experience of stress at work (not=16%/a little=74%/quite=9%/very=0%)

S-rep 63. Burdened by experience of stress at work (not=83%/a little=13%/quite=2%/very=2%)

S-rep 64. Today's stress compared to normal stress (less=43%/normal=55%/more=2%)

S-rep 65. Perceived tension (never=15%/sometimes=55%/few times per week=16%/>1 time per day=14%)

Workstation set-up

S-rep 66. Use of laptop for office computer work (no=88%/<desktop use=7%/equal to desktop use=2%/>desktop use=1%/always=2%)

S-rep 67. Lack of space on desk for proper mouse use (never=60%/sometimes=35%/often=5%/always=0%)

S-rep 68. Mouse functioning (never=76%/sometimes, often, or always=24%)

S-rep 69. Monitor location relative to keyboard (in front=92%/left or right=8%)

S-rep 70. Monitor height relative to eyes (eye level or lower=88%/higher=12%)

S-rep 71. Keyboard height relative to elbows (above=15%/level to=80%/other=5%)

S-rep 72. Chair height (knees higher than hips=0%/knees level to hips=94%/cannot put feet on floor=6%)

S-rep 73. Keyboard >10cm from table edge (yes=83%/no=17%)

S-rep 74. Keyboard supports unfolded (yes=61%/no=39%)

S-rep 75. Mechanical mouse with little ball underneath, instead of optical mouse (no=90%/yes=10%)

S-rep 76. Mouse location relative to keyboard (right beside=24%/further away from=37%/next to and behind=22%/in front of and next to=17%/directly in front of=0%/another place=0%)

AWM 77. Measured key activation force (mean=0.36 N, standard deviation=0.36 N)

AWM 78. Measured key displacement (mean=3.1 cm, standard deviation=0.2 N)

AWM 79. Measured knee height, footrest or floor to crease behind knees (mean=48 cm, standard deviation=3 cm)

AWM 80. Measured chair height, footrest or floor to chair seat (mean=50 cm, standard deviation=3 cm)

AWM 81. Measured monitor distance, monitor screen to nose (mean=67 cm, standard deviation=9 cm)

AWM 82. Measured elbow height, footrest or floor to elbow (mean=75 cm, standard deviation=4 cm)

AWM 83. Measured eye height, elbow to eye (mean= cm, standard deviation= cm)

AWM 84. Measured keyboard height, footrest or floor to keyboard (mean=77 cm, standard deviation=3 cm)

AWM 85. Measured keyboard distance, edge of table to keyboard (mean=24 cm, standard deviation=9 cm)

AWM 86. Measured mouse height, footrest or floor to mouse (mean=83 cm, standard deviation=65 cm)

AWM 87. Measured mouse distance, participant midline to mouse (mean=43 cm, standard deviation=7 cm)

AWM 88. Measured mouse direction, angle from participant midline to mouse (mean=53 cm, standard deviation=11 cm)

AWM 89. Measured monitor height, footrest or floor to monitor (mean=121 cm, standard deviation=10 cm)

AWM 90. Measured seat depth, front edge of chair to backrest (mean=46 cm, standard deviation=3 cm)

AWM 91. Measured monitor screen diagonal length (mean=47 cm, standard deviation=5 cm)

AWM 92. Measured keyboard tilt angle (mean=7 degrees, standard deviation=4 degrees)

Leisure-time activities

S-rep 93. Number of days per week with at least 30 minutes moderate physical activity (mean=4 days, standard deviation=2 days)

S-rep 94. Time in past 3 months performing strenuous physical activity (never=13%/<1 per month=12%/1-3 times per month=13%/1 per week=18%/2 per week=22%/3+ times per week=22%)

S-rep 95. Strength training of upper body in last 3 months (yes=25%/no=75%)

S-rep 96. Playing sports involving upper extremities (e.g. racket sports, volleyball) in last 3 months (yes=15%/no=85%)

S-rep 97. Hand intensive activities during leisure time in last 3 months (yes=27%/no=73%)

S-rep 98. Duration of computer use during leisure time in last 3 months (almost never=0%/0 to 1 hours per day=9%/1 to 2 hours per day=43%/2 to 4 hours per day=34%/4 to 6 hours per day=12%/6 to 8 hours per day=2%/>8 hours per day=0%)