



A model database for salivary cortisol in occupational studies

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A model database for salivary cortisol in occupational studies

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Nordic co-operation

Nordic co-operation, one of the oldest and most wide-ranging regional partnerships in the world, involves Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, Greenland and Åland. Co-operation reinforces the sense of Nordic community while respecting national differences and similarities, makes it possible to uphold Nordic interests in the world at large and promotes positive relations between neighbouring peoples.

Co-operation was formalised in 1952 when *the Nordic Council* was set up as a forum for parliamentarians and governments. The Helsinki Treaty of 1962 has formed the framework for Nordic partnership ever since. The *Nordic Council of Ministers* was set up in 1971 as the formal forum for co-operation between the governments of the Nordic countries and the political leadership of the autonomous areas, i.e. the Faroe Islands, Greenland and Åland.

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Preface

The purpose of the present project is to co-ordinate Nordic data on measurements of physiological effects of occupational stressors, including description of sampling strategy and quality assurance of studies. The basis of this project was an offspring of a previous project entitled 'A model for co-ordination of data from measurements of physiological effects of occupational stressors', funded by the Nordic Council of Ministers (Hansen et al., 2000, pp. 1-117). During the project it was planned to establish a model database at the Danish National Institute of Occupational Health. This project makes it possible to improve harmonization, to compare data, and to have access to qualified data to be used in the establishment of the basis of reference and comparability. The joint action for co-ordination of data may be useful for evaluation of the usefulness of hormones as a measure for physiological effects of occupational stressors across countries. The project has been planned and carried out by the members of the Nordic network:

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Summary

The purpose of the present project was to improve the comparability of physiological measures in relation to job stress and thereby improve the possibilities to draw conclusions from studies within the Nordic countries. A Nordic database based on databases placed locally at the participating institutes was established. In the future, the database will be accessible to participants of the Network via the internet. The database may be used for scientific purposes only. To ensure the quality of data in the database, a laboratory comparison of measurements of cortisol in saliva was performed.

Samples used for scientific purpose may be stored long-term before analysis due to lack of financial support. Therefore a storage study was established to document long-term storage of saliva samples for measurement of cortisol. Results from the study show that centrifuged saliva samples for analysis of cortisol may be stored at 5°C for up to 3 months and at -20°C or -80°C for at least one year. Long-term storage at room temperature cannot be recommended. Furthermore, it is recommended to centrifuge samples and transfer the saliva to suitable containers before long-term storage of saliva for measurement of cortisol. Repeated cycles of freezing and thawing do not appear to affect concentrations of cortisol.

Two laboratory comparison schemes were established. Nine laboratories participated in the first laboratory comparison and 18 laboratories participated in the second comparison. In general the recovery of the used methods in the first laboratory comparison was 108% of spiked samples and the mean standard deviation at a concentration of 10 nmol/l was approximately 10%. Both laboratory comparisons showed that the variation between laboratories was high, which emphasizes the need for a proficiency testing scheme for cortisol in saliva. The variation between methods emphasizes the need for a certified reference material for cortisol in saliva, e.g. for calibration of kits. This was the first study performing and presenting a laboratory comparison of measurements of cortisol in saliva.

A Nordic model database was established for salivary cortisol in SAS and SPSS statistical software. The database includes data from six studies where salivary cortisol has been used as a supplement to assess job stress in Denmark, Norway, and Sweden. A total of 6311 measurements from 939 individuals from Denmark, Norway, and Sweden are so far included.

1. Introduction

Measurements of physiological effects of occupational stressors are widely used as objective measures. It is time consuming and expensive to establish all methods and collect data for each institution. For studying of normal biological variations necessary for assessment of data from work environmental studies, it is of great value to have access to large amounts of data. This concerns normal biological variations such as geographical, ethnical, social, and lifestyle differences. A joint action for establishment of a model for co-ordination of data of measurements of physiological effects of occupational stressors will be valuable for future studies on prevention of health effects. The purpose of the present project was to co-ordinate Nordic data on measurement of physiological effects of occupational stressors, including description of sampling strategy and quality assurance of studies.

The establishment of a Nordic database on physiological indicators of stress response was proposed as a platform for future collaboration at a previous workshop in Stockholm, April 2000. This work was published in a report ultimo 2000 entitled 'A state of the art report on physiological measures in relation to job stress in the Nordic countries' (Hansen et al., 2000, pp. 1-117).

The measurement of biomarkers may serve two purposes in occupational health research and monitoring:

Biomarkers may serve as indicators of exposure and dose: Biomarkers may provide information of the workload and demands, of the effort invested by the subjects, and of the adaptational responses produced by the work situation. If the object of the investigation is to assess exposure, one should aim at measuring parameters that reflect activity of neural or hormonal responses, i.e. measure parameters that are as close as possible to the central nervous system.

Biomarkers may serve as indicators of potential effects: Biomarkers may provide information pertaining to the potential for disease development. Measurement of physiological parameters, which are associated with the pathogenesis of disease, may provide information of risk for negative health effects. If the object of the investigation is to assess specific effects or outcomes, one should measure parameters that reflect possible pathogenic mechanisms of precursors of disease, i.e. are as close as possible to the potential effect (Hansen et al., 2000, pp. 1-117).

2. Scope of the network

The main purpose was to improve the comparability of data and thereby improve the possibilities to draw conclusions from studies in the Nordic countries. Three subpurposes were outlined:

1. To improve the comparability of methods by co-ordinate Nordic data on measurement of physiological effects of occupational stressors (e.g. discussion of sampling protocols, sampling time, storage of samples etc.)
2. To establish a laboratory comparison between the institutions participating in the Nordic Network
3. To establish a model database for measurement of physiological effects (salivary cortisol was chosen as a start component)

3. Collection of samples and long-term storage of cortisol in saliva

The first purpose was to improve comparability of methods by co-ordinate Nordic data on measurement of physiological effects of occupational stressors (e.g. discussion of sampling protocols, sampling time, storage of samples etc.). Experiences with sample collection and storage, which may be a major contributor to the uncertainty of the results, were discussed at a work shop. The best time for sampling in order to evaluate the morning response was discussed. It was suggested to sample immediately at awakening followed by sampling once (e.g. approx. +30 minutes) or twice within the first hour (e.g. +15 minutes and +30 minutes). The importance of taking a note of the exact sampling time was emphasized, because time of awakening may influence the morning response.

Further, it was discussed whether to increase the number of samples per subject or the number of subjects given a limited funding for a project. No consensus on the recommendation on the number of samples or subjects was made.

All participants had experienced problems with small volumes of saliva. In relation to this the differences between different saliva glands were discussed. It was stressed not to use Salivette® with citric acid in order to increase saliva production. Citric acid interferes with many immunoassays. Further, it cannot be excluded that cigarette smoking before sampling may interfere with the matrix.

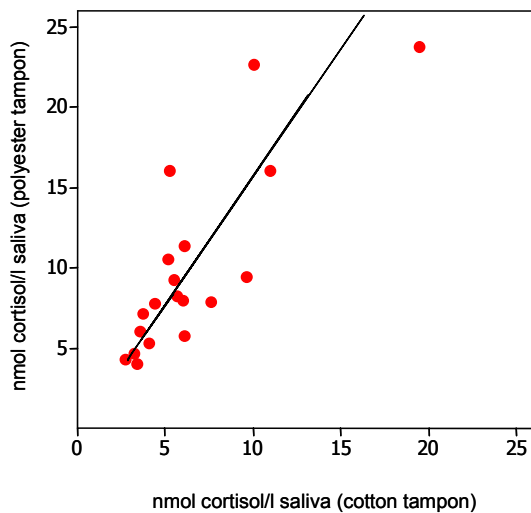
Production of Salivette® with polyester tampons was ended in the middle of 2003 and replaced by Salivette® with cotton tampons. Influence of the tampon of sampling was found previously for other components (Shirtcliff et al., 2001, pp. 165-173). Therefore it cannot be excluded that the measurement of cortisol was influenced by the tampon of sampling. Hence the National Institute of Occupational Health established a comparison of collection of saliva samples with polyester and cotton tampons.

In these discussions, the question of conditions regarding storage, particularly long-term storage came up as being of great concern. A storage study was designed and performed at the National Institute of Occupational Health in Denmark (Hansen and Garde, 2004b). The protocol was sent to all network members in the beginning of 2003 for discussion.

3.1 Comparison of sampling with polyester and cotton tampons

Saliva samples were collected directly into plastic tubes from 19 healthy individuals. An amount of saliva from each subject of $0.513 (\pm 0.004)$ g was spiked to polyester tampons ($n=19$) and cotton tampons ($n=19$). The samples were treated as ordinary samples, e.g. frozen, thawed, and centrifuged before analysed for cortisol by use of a Spectria RIA kit for cortisol (Orion Diagnostica). The results were illustrated in the figure 1.

Figure 1. Concentration of cortisol in saliva collected with cotton and polyester tampons



The recovery of saliva from polyester Salivette® was 95.8% ($\pm 1.1\%$) and from cotton Salivette® 54.7% ($\pm 2.3\%$). These results indicate that the cotton tampons detain at least 40% of the saliva when the amount of saliva spiked to the ten tampons was approx. 0.5 g. In none of the samples were the measured concentrations higher in saliva spiked to cotton tampons compared to polyester tampons. This result strongly indicates that the material of the tampon somehow affects the measured concentration of cortisol.

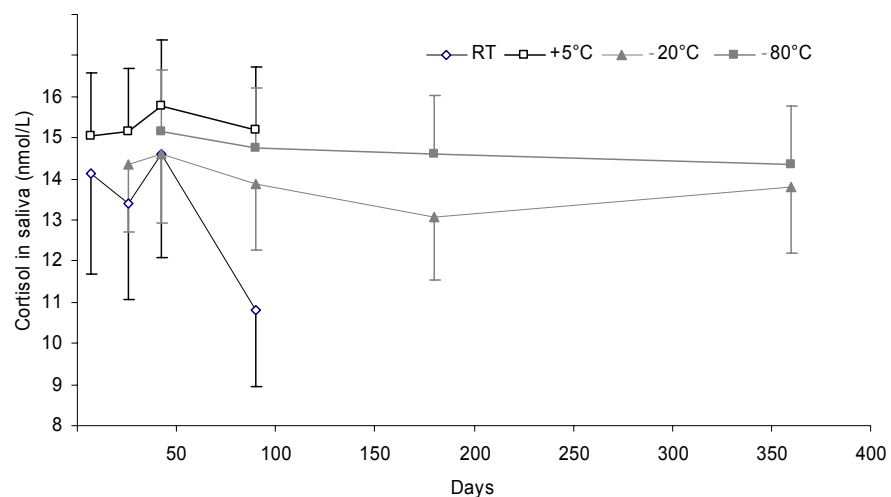
3.2 Long-term Storage of cortisol in saliva collected on Salivette®

The aims of the storage study were to explore the effects of long-term storage at different temperatures (RT, 5°C, -20°C and -80°C) and the influence of repeated freezing and thawing of samples on the concentration of cortisol in saliva. Furthermore, for samples collected by use of

Salivette®, the effect of centrifugation and storage in a separate vial was compared to storage on the tampon (figure 1).

Figure 2 presents concentrations of cortisol in saliva spiked to Salivette® and stored at room temperature (RT), 5°C, -20°C, and -80°C

Figure 2. Concentration of cortisol in saliva stored at room temperature (RT), 5°C, -20°C, and -80°C.



It was concluded from the study that centrifuged saliva samples for analysis of cortisol may be stored at 5°C for up to 3 months or at -20°C or -80°C for at least one year. Long-term storage at RT cannot be recommended. Furthermore, it was recommended to centrifuge samples and transfer the saliva to suitable containers before long-term storage of saliva for measurement of cortisol. Repeated cycles of freezing and thawing do not appear to affect concentrations of cortisol (Hansen and Garde, 2004a).

4. Laboratory comparison of salivary cortisol measurement

The second purpose was to establish a laboratory comparison in the first place for the institutions participating in the Nordic Network.

A laboratory comparison of measurement of cortisol in saliva was performed in 2002 (Garde et al., 2003, pp. 20). Out of twelve invited laboratories, nine laboratories representing four different methods, participated in the study. Five blinded samples prepared from a pool of natural saliva spiked with a pure certified reference material in the range 0-70 nmol/L were sent to all laboratories. The results are summarized in Table 1.

Table 1. Method performance parameters for four different methods in the first laboratory comparison for measurement of cortisol in saliva

Method	Laboratory	Recovery	95% Confidence interval	Intercept	95% Confidence interval	SD at 10 nmol/l	Natural content of saliva
		%	%	nmol/l	nmol/l	nmol/l	nmol/l
Spectria							
	I	120	[110 - 131]	8.55	[6.32 - 10.79]	0.86	7.11
	II	117	[107 - 127]	8.29	[6.06 - 10.52]	0.87	7.09
	III	113	[92 - 133]	10.96	[6.49 - 15.42]	1.67	9.70
	IV	110	[103 - 118]	7.64	[6.01 - 9.27]	0.64	6.93
	V	83	[73 - 92]	6.41	[4.35 - 8.47]	0.80	7.76
C-A-C							
	VI	164	[76 - 252]	27.52	[8.43 - 46.62]	6.26	16.80
	VII	100	[93 - 107]	6.10	[4.56 - 7.64]	0.66	6.11
LC-MS-MS							
	VIII	91	[76 - 106]	2.70	[-0.49 - 5.88]	1.31	2.96
In-house							
	IX	131	[120 - 143]	9.01	[6.52 - 11.50]	0.89	6.88
All laboratories		115	[95 - 134]	9.67	[5.58 - 13.75]	7.10	8.44
All laboratories except outlier		108	[99 - 118]	7.45	[5.46 - 9.44]	3.50	6.88

C-A-C: Coat-a-count; LC-MS-MS: liquid chromatography tandem mass spectrometry;
SD: Standard deviation.

A second round of laboratory comparison was performed in 2003 (Garde and Hansen, 2003, pp. 253-254). Out of 20 invited laboratories, a total of 18 laboratories from six countries participated in the inter-laboratory comparison. Five saliva samples spiked with a certified reference material and three natural saliva samples were distributed to the participating laboratories. Results were reported for three groups of methods with a

minimum of three laboratories per group: RIA-Spectia, HPLC-MSMS and other methods. The results were compared to the consensus of laboratories in the same group.

Table 2. Method performance parameters for three different methods in the second laboratory comparison for measurement of cortisol in saliva

Method	Number of laboratories	Recovery in spiked	Measured concentration in
		samples	natural samples
	N	%	nmol/l
RIA (Orion)	9	145 [CI: 127-163]	5.7 [CI: 4.8-6.7]
HPLC-MSMS	3	100 [CI: 94-105]	1.5 [CI: 0.4-2.6]
Others	6	102 [CI: 80-124]	5.1 [CI: 3.8-6.3]

The conclusions of the laboratory comparisons

In general, the recovery of the used methods in the first laboratory comparison was 108 % and the mean standard deviation at a concentration of 10 nmol/l was 3.50 nmol/l. Both laboratory comparisons showed that the variation between laboratories was high, which emphasizes the need for a proficiency testing scheme for cortisol in saliva. The method variation emphasizes the need for a certified reference material for cortisol in saliva, e.g. for calibration of kits. The results from the study have been passed on to the External Quality Assurance in Laboratory Medicine in Sweden (EQALIS), which may consider establishing an interlaboratory comparison scheme for salivary cortisol. This was the first study performing and presenting a laboratory comparison of salivary cortisol.

5. A Nordic database for salivary cortisol

The third purpose of the project was to establish a model database for measurement of physiological effects. Establishment of a model database was discussed in a workshop in 2001. We invited Lisbeth Ehlert Knudsen, Ass. Prof, University of Copenhagen to present experience with establishment of a database for the European Chromosome cohort study involving chromosome aberrations and DNA damage. Salivary cortisol was chosen to be the start component. A Nordic model database was established in SAS and SPSS statistical software. At present, the database includes data from six studies in Denmark, Norway, and Sweden (Eller et al., 2001, pp. 175-185; Lundberg and Lindfors, 2002, pp. 354-364; Kristenson et al., 2002, pp. 155; Garde et al., 2003, pp. 297-306; Hansen et al., 2004). Number of subjects and number of samples are given in Table 3. A total of 6311 saliva samples from 939 individuals from Denmark, Norway, and Sweden are so far included.

Table 3. Studies and number of subjects in the Nordic database

Study	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
Country	Denmark	Sweden	Sweden	Sweden	Sweden	Norway
Design	Random sample	Field study	Field study	Random sample	Outcome stratified	Outcome stratified
Number of individuals	130	23	17	258	457	54
Number of women/men	87/43	11/12	17/0	129/129	293/164	0/62
Number of samples per subject	4	18	35	9	4	12
Days samples (Number)	1	3	5	3	1	3
Total number of samples	486	392	506	2323	1966	639

Documentation

To ensure the quality of data in the Nordic Model database, procedures for submitting data were established in 2002. The project should be followed by a description (Appendix 1) including the title of the project, name of the institute performing the study, name of the contact person, reference to original project or published study, a short description, and purpose of the study.

The database consists of 45 variables (appendix 2). The subjects included were assigned a country code (e.g., DK for Denmark, S for Sweden

etc.), a specific number in the order they were included in the Database, and the date of import. Study design was assigned one of four categories as random, outcome stratified, exposure stratified or not specified. Table 4 presents variables in the database. Further details are described in Appendix 2. Mandatory variables were: Country, age (5-year intervals), gender, occupation (categories), weekday, workday or day off, time of day, time of year, matrix, type of response, concentration, laboratory method used. Optional variables were: SES (income, education), health status (sickness leave, sickness compensation (self-reported or from company), self-reported health, self-reported expected health), lifestyle factors (smoking, alcohol, medicine, physical activity), job stressors (Siegrist et al., 1997, pp. 112-116; Karasek et al., 1998, pp. 322-355), menopause status, state anxiety, and psychosomatic symptoms.

Table 4. Variables included in the database

Variables	Topics	Reference
Demografic	Age, gender, height, weight	
Life style	Alcohol, coffee, medication, smoking	
Physical activity	From light physical activity < 2 hours per week to Hard practice > 4 hours per week	
Skills	Formal education, occupation code, industry code, title of occupation, title of industry	ISCO 88 code
Workplace	Work day, work shift, work place	
Work position	Contract worker, super visory worker	
Sickness	Sickness leave during past year and sickness compensation	
General health	Self-reported general health, expected self-reported general health, vitality	SF-36(Björner et al., 1997)
Stress scales	Social support, job demands, job control, overcommitment effort, extrinsic effort, reward	All scales standardize to 100%, referring to a table with used questionnaire (original language) (Siegrist et al., 1997, pp. 112-116; Karasek et al., 1998, pp. 322-355)
Laboratory analysis	Method description, unit, uncertainty, limit of detection (LOD), accreditation,	(Hansen et al., 2003, pp. 303-310)
Documentation	Reference interval, analytical method published	
Sample specification	Date and time of sampling	

In case of missing values, the project managers were asked to indicate whether the variable was A (no answer), B (not of interest of the original project), C (< limit of detection), D (not possible to classify), E (not relevant).

Each study was followed by documentation on ethical issues (approval by local ethical committees), how data were collected, a copy of information to subjects, facts about analytical methods used (by filling out a form (see appendix 3)), and if available national reference intervals.

Part of the information could be (but is not necessarily) in the form of a published paper.

Ethical issues

All national databases from which the data are submitted to the present model database must be approved by local ethical committees. Data in the Nordic database were numbered consecutively for each country and will be anonymous. Individuals in the national databases may or may not be identifiable. The project was approved by The Danish Data Protection Agency (reference number 2001-54-0817). The approved application is available at their home page (<<http://www.datatilsynet.dk/fortegnelse/index.html>>). Go to '*Slå op i fortegnelse*' and write the reference number 2001-54-0817 in the field '*Skriv journalnr. eller en del af dette*', press '*find*' and the approved application will appear. The application is in Danish.

Authorship

The institutes which have submitted data, have access to the database and may suggest studies for publication. A small committee consisting of U. Lundberg, H. Ursin, R. Kalimo (now retired), and Å.M. Hansen was established. It was agreed that this committee was to accept all proposals for publications based on information from the database. Generally, the Vancouver rules must be followed, e.g. only persons who have substantially contributed to a paper may appear as an author.

6. Within and between subject variation of salivary cortisol

6.1 An example of how to use the Nordic database.

In this example we tested whether there were differences between study samples in the Nordic countries with respect to within and between subject variations in salivary cortisol. The analysis was performed by estimating the within and between subject variations for each project.

Statistics

Statistical analysis was carried out using SAS® System™, version 8.02 (SAS Institute Inc., Cary, NC, USA).

Variance component models were used to estimate within and between variations in salivary cortisol. Due to non-normal (skewed) distributions and increasing variance (proportional to level of measurements), concentration of salivary cortisol was analysed on a logarithmic scale. Variables included in the initial model as independent variables were exact time of sampling, categoric time, and age. Categoric time was defined as: '1' for awakening; '2' for sampling within the first hour after awakening; '3' between 07:00 and 09:00; '4' between 09:00 and 11:00; '5' between 11:00 and 13:00; '6' between 13:00 and 15:00; '7' between 15:00 and 17:00; '8' between 17:00 and 19:00; '9' between 19:00 and 21:00; '10' between 21:00 and 24:00. Project 6 sampled saliva at awakening, + 30 minutes, + 6 hours and + 12 hours after awakening and did not collect the time of sampling. Hence, the average awakening time in project 6 was set to be 06:00 for use in the statistical analysis and for Figure 3.

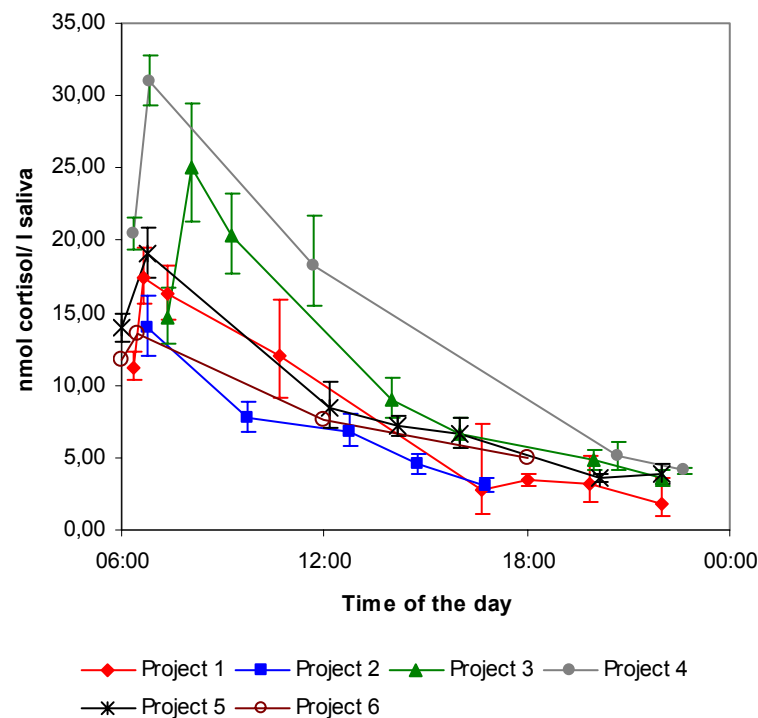
Results

Table 5 presents demographic variables of the study groups included in the database. The six studies covered an age range from 20-70 years of age. Project 1, 2, 4 and 5 included both men and women. Project 3 included only women and project 6 only men. Height, weight, and BMI were only calculated for project 1, 2, 4 and 5. A number of variables were 'not of interest for the original project'. Hence the values appear as B in Table 5.

Table 5. Variables describing the study group included in the database

Project (Country)		1 (DK)	2 (S)	3 (S)	4 (S)	5 (S)	6 (N)
Number of subjects		130	23	17	258	457	54
Women/men		87/43	11/12	17/0	129/129	293/164	0/62
Number of samples per subject		4	18	35	9	4	4
Number of samples per subject per day		4	6	7	3	4	3
Age (year)	Minimum	30	20	25	20	30	20
	Maximum	59	64	59	70	69	64
BMI in kg/m ² (Women/men)	Mean	23.7/25.9	24.4/21.9	B	25.3/24.6	27.8/28.4	B
	5% percentile	19.3/22.1	19.3/18.3	B	20.7/19.7	19.5/21.4	B
	95% percentile	29.5/32.6	.	B	31.2/33.7	33.6/34.3	B
Smoking (N)	Smoker	31	B	4	60	79	26
	Non smoker	51	B	5	111	260	5
	Former smoker	45	B	7	38	124	11
Alcohol, drinks per week	Mean	8	B	3	B	B	5
	Minimum	0	B	0	B	B	0
	Maximum	47	B	28	B	B	18
Self-reported general health	Mean	2.4	B	2.2	2.4	2.5	B
	Minimum	1.0	B	1.0	1.0	1.0	B
	Maximum	4.0	B	4.0	5.0	5.0	B
Expected self-reported general health	Mean	3.7	B	B	B	3.8	B
	Minimum	1.0	B	B	B	1.0	B
	Maximum	5.0	B	B	B	5.0	B
Vitality	Mean	B	B	B	B	4.5	B
	Minimum	B	B	B	B	1.0	B
	Maximum	B	B	B	B	5.0	B

Figure 3 presents mean concentrations of cortisol in saliva versus time of sampling for each project. Concentrations of cortisol in saliva from subjects in project 4 appear to be higher than observed in the projects 1, 2, 5 and 6. The difference was observed in the morning concentrations. The difference may partly be due to differences in the applied analytical methods used in the projects (Garde et al., 2003, pp. 20).

Figure 3. Concentration of cortisol in saliva plotted against sampling time

Within subject and residual variation in the three projects are presented in Table 5. The concentration of cortisol in the first sample, corresponding to cortisol at awakening in the included projects was between 11.26 and 20.42 nmol/l. The concentration in the first sample in project 5 was approx. 50% higher than observed in the other projects. The morning response (% increase from the first sample to the second sample) was between +15% to +70% (1.15-1.70).

The difference between the first sample and the last sample collected (regarded in the literature as recovery) was 16% to 43% (0.16-0.43). The difference in recovery was not due to time of awakening.

The within subject variation was observed to be between 17% and 29% and the between subject variation was observed to be between 45 – 65%. Project 2 and 3 included subjects performing the same task, e.g. project 2 includes men and women performing telework only, and project 3 includes women sorting wooden slats only. No difference was observed in within and between subject variations in these two projects. The projects 1, 4, and 5 included men and women, who performed a number of jobs. Hence we expect the within and the between subject variation to be larger. Project 6 was performed among men working 21 days shift periods and long work hours in an isolated and extreme environment. Thus the difference in within and between subjects variation observed in the projects may be due to heterogeneity in the study samples. It is beyond the scope of this study to draw further conclusions.

7. Conclusion and future perspectives

The network has shown that there is an interest for harmonization, for possibility of comparing data, and to have access to qualified data within the Nordic countries. Further, a few European laboratories have shown interest in the interlaboratory comparison scheme performed in this study. It was decided to continue the network and open the network for other Nordic and European institutions with interest in physiological measures of stress. Further, the network has been basis for a learning forum for PhD students by initiating a NIVA course in 2002 on 'Biomarkers of stress in relation to occupational health'.

The database will be open for submitting data from projects including salivary cortisol in the database studies. It was also suggested to expand the Nordic database, e.g. invite European institutes to submit data to the Nordic Database from their occupational studies. AMI, Denmark, will continue the coordination of the Network and update the Nordic database.

At previous meetings, the use of the Nordic database has been discussed. The following topics for use of the Nordic database have been suggested:

- Establishment of reference values
- Comparison between Nordic countries
- Relationship of psychosocial stress to socio-economic-status
- Relationship to sickness/health status
- Relationship to lifestyle factors
- Relationship to job stress

The institutes which have submitted data, have access to the database and may suggest studies for publication. A small committee consisting of U. Lundberg, H. Ursin, and Å.M. Hansen was established. It was agreed that this committee was to accept all proposals for publications based on information from the database.

A homepage of the Network will be established with links to homepages of the institutes of the participants. Furthermore, the homepage should present publications from the network. Database access with password for Institutions, which submitted data to the database should be established. Other suggestions for the homepage was a list of recommendations e.g. in relation to collection of samples. AMI will be responsible for maintenance of the homepage.

Sammenfatning

Formålet med dette studie var at øge sammenligneligheden af fysiologiske mål i relation til job stress for derved at øge muligheden for at drage konklusioner på tværs af grænser i Norden. En Nordisk database baseret på databaser fra de deltagende institutioner blev etableret. Database indeholder målinger af kortisol i spyt og vil være tilgængelig for institutioner som har indsendt data via internettet. Database kan kun bruges til forskningsmæssige formål og ikke til kommercielle formål.

Prøver, der indsamles i forbindelse med forskningsprojekter, vil ofte blive opbevaret i længere tid før analyse, fx hvis der mangler finansiering. Derfor blev der etableret et studie til at undersøge, hvorledes koncentrationen af kortisol i spyt ændres ved opbevaring i længere tid. Resultater fra studiet viser at centrifugerede spytprover kan opbevares ved 5° i op til 3 måneder og ved -20° og -80° i mindst et år. Opbevaring ved stuetemperatur kan ikke anbefales. Det anbefales at centrifugere spytprover og opbevare dem i mindre beholdere før opbevaring i længere tid. Gentagen frysning og tøning af spytproverne har ingen indflydelse på koncentrationen af kortisol.

Der blev etableret to laboratoriesammenligninger. 9 og 18 laboratorier deltog i henholdsvis den første og den anden laboratoriesammenligning. Den første laboratoriesammenligning viste en genfinding på 108% af spikede prøver, og standardafvigelsen ved en koncentration på 10 nmol var ca. 10%. Begge laboratoriesammenligninger viste en stor variation mellem laboratorier, hvilket understreger nødvendigheden af en prøvningstest for laboratorier. Der er ligeledes fundet en stor variation mellem metoder, hvilket peger på et behov for et certificeret referencemateriale, fx til kalibrering af metoder. Dette er det første studie som præsenterer og gennemfører en laboratoriesammenligning for måling af kortisol i spyt.

En Nordisk model database blev etableret i SAS og SPSS statistisk programmer. Model database blev etableret for kortisol i spyt, idet flest deltagende institutioner havde erfaring med denne komponent. Database indeholder på nuværende tidspunkt 6 studier, hvori der har været målt kortisol i spyt som et supplement til måling af job stress. I alt indeholder database 6311 målinger fra 939 personer fra Danmark, Norge og Sverige.

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Appendix 1. Project outline

Title of the project:

Date of import:

Institute:

Country:

Contact person:

Design:

Reference to project:

Subject numbers in the Database: Filled in at the National Institute of Occupational Health, Denmark.

Introduction:

Questionnaire used:

Construction of Scales:

Appendix 2. Database outline

8 May 2002

Guidelines for the database

The outline for the database is partially based on the questionnaires: QSP-Nordic, SF-36, ISCO88, The Copenhagen Psychosocial Questionnaire, Work ability index etc.

The data should be followed by a description of the original project, including questionnaire used with reference to original questionnaire, e.g., Whitehall, SF-36, QPS-nordic including description of variables and scales etc.

When the individual occurs several times, each sample should be given the same ID number: When there are several biological samples per individual and several components measured each measure should represent one record, e.g. the same individual can occur several times in the database and is given the same ID number. Example:

Missing data are coded as:

SAS Numeric/ character	All other databases and Excel	
.A / A	-91	No answer.
.B / B	-92	Not of interest for the original project.
.C / C	-93	< limit of detection.
.D / D	-94	Not possible to classify.
.E / E	-95	Not relevant

Table 1. Variables in the database

Label in Database	Name: Label	Format	Unit
Nordat1	Country	Character	S = Sweden, N = Norway, SF = Finland, DK = Denmark
Nordat2	ID number	Numeric	000001- 999999 (personal identification number)
Nordat3	Import date	Time/date	ddmmyyyy (date of import of these data)
Nordat4	Reference to project	Character	Published study or original project information
Nordat5	Design	Character	R = random, OS = outcome stratified, ES = exposure stratified, or NS = not specified or others
Nordat6	Gender	Numeric	1 = Male, 2 = Female
Nordat7	Work day	Numeric	0 = No, 1 = Yes
Nordat8	Workplace	Numeric	0 = Office, 1 = Home workplace
Nordat9	Shift	Numeric	1 = Day shift (0600-1800), 2 = Evening (1500-2400), 3 = Night (2200-0600), 4 = Mixed shifts
Nordat10	Age	Numeric	0 = < 20 years 1 = 20-24 years 2 = 25-29 years 3 = 30-34 years 4 = 35-39 years 5 = 40-44 years 6 = 45-49 years 7 = 50-54 years 8 = 55-59 years 9 = 60-64 years 10 = 65-69 years 11 = >= 70 years
Nordat11	Height	Numeric	Meter (filter, e.g. 1.5m < height <2.2 m)
Nordat12	Weight	Numeric	Kg (filter, e.g. 40 kg < weight < 120 kg)
Nordat13	BMI (body mass index)	Numeric	Calculated (kg/m ²) (filter, e.g. 18 < BMI < 45)
Nordat14	Smoking	Numeric	1 = Smoker 2 = Non smoker 3 = Former smoker
Nordat15	Tobacco	Numeric	Gram tobacco per day (one cigaret = one gr tobacco, one cigar / cheroot = 5 gr. Tobacco)
Nordat16	Alcohol	Numeric	Drinks per week (one drink is equivalent to one beer, one glass of wine, or one measure of alcohol=12 gr. alcohol)
Nordat17	Coffee	Numeric	Cups of coffee per day
Nordat18	Medication	Numeric	0 = No; 1 = Hormones; 2 = Pain killers; 4 = Cardiovascular, blood pressure 8 = Others; Add the numbers (if an individual used hormones and pain killers its equal to 1+2 = 3)

Nordat19	Physical activity	Numeric	1 = Light physical activity < 2 hours per week 2 = Light physical activity 2-4 hours per week 3 = Light physical activity > 4 hours per week or hard practice 2-4 hours per week 4 = Hard practice > 4 hours per week
Nordat20	Title of occupation	Character	Description
Nordat21	Occupation code	Numeric	A unique number (by use of ISCO 88 code see Table 2)
Nordat22	Title of industry	Character	Description
Nordat23	Industry code	Numeric	A unique number (by use industry code see Table 3)
Nordat24	Formal education	Numeric	1 = Comprehensive school (1-9 years) 2 = Secondary school/ vocational school (10-12 years) 3 = College degree (13-16 years) 4 = Higher university degree (more than 16 years)
Nordat25	Are you a contract worker	Numeric	1 = Yes, 0 = No
Nordat26	Is your job a supervisory position?	Numeric	1 = Yes, 0 = No
Nordat27	Sickness leave during the past year	Numeric	5 = none at all 4 = at the most 9 days 3 = 10-24 days 2 = 25-99 days 1 = > 99 days
Nordat28	Sickness compensation	Numeric	Days per year
Nordat29	Self-reported general health (SF-36)	Numeric	In general, would you say your health is 1 = Excellent 2 = Very good 3 = Good 4 = Fair 5 = Poor
Nordat30	Expected self-reported general health (SF-36)	Numeric	I expect my health to get worse 1 = Definitely true 2 = Mostly true 3 = Don't know 4 = Mostly false 5 = Definitely false
Nordat31	Vitality (SF-36)	Numeric	During the past 4 weeks, how much of the time has your physical health and emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)? 1 = All of the time 2 = Most of the time

3 = Some of the time

4 = A little of the time

5 = None of the time

Nordat32	Social support	Numeric	Standardize to 100%, referring to a table with used questionnaire (original language)
Nordat33	Job demand	Numeric	Standardize to 100%, referring to a table with used questionnaire (original language)
Nordat34	Job control	Numeric	Standardize to 100%, referring to a table with used questionnaire (original language)
Nordat35	Overcommitment effort	Numeric	Standardize to 100%, referring to a table with used questionnaire (original language)
Nordat36	Extrinsic effort	Numeric	Standardize to 100%, referring to a table with used questionnaire (original language)
Nordat37	Reward	Numeric	Standardize to 100%, referring to a table with used questionnaire (original language)
Nordat38	Date of sampling	Time/date	ddmmyyyy
Nordat39	Time of sampling	Time/date	hhmm
Nordat40	Component	Character	Name of component (only cortisol in the beginning)
Nordat41	Analytical method	Numeric	Method number, will be given when data are transferred to database (refers to a specific numbered table with analytical method and performance parameters, outline as Table 4)
Nordat42	Date of analysis	Time/date	ddmmyyyy
Nordat43	Matrix	Character	Saliva
Nordat44	Concentration	Numeric	Concentration of measured component
Nordat45	Describe time of sampling	Character	If time of sampling lack, then describe the sampling, e.g. at wake up, +30 minutes after wake up, +8 hours after wake up etc.

Table 2. ISCO 88, 2-numbered job code

Code	Description
	01 Armed forces
10	Legislators, senior officials and managers
	11 Legislators and senior officials
	12 Corporate managers
	13 General managers (this group is intended to include
20	Professionals
	21 Physical, mathematical and engineering science professionals
	22 Life science and health professionals
	23 Teaching professionals
	24 Other professionals
30	Technicians and associate professionals
	31 Physical and engineering science associate professionals
	32 Life science and health associate professionals
	33 Teaching associate professionals
	34 Other associate professionals
40	Clerks
	41 Office clerks
	42 Customer services clerks
50	Service workers and shop and market sales workers
	51 Personal and protective services workers
	52 Models, salespersons and demonstrators
60	Skilled agricultural and fishery workers
	61 Market-oriented skilled agricultural and fishery workers
70	Craft and related trades workers
	71 Extraction and building trades workers
	72 Metal, machinery and related trades workers
	73 Precision, handicraft, printing and related trades workers
	74 Other craft and related trades workers
80	Plant and machine operators and assemblers
	81 Stationary-plant and related operators
	82 Machine operators and assemblers
	83 Drivers and mobile-plant operators
90	Elementary occupations
	91 Sales and services elementary occupations
	92 Agricultural, fishery and related labourers
	93 Labourers in mining, construction, manufacturing and transport

Table 3. Industry, 3-numbered code

Code	Description
010	Metal and steelworks, and foundries
020	Manufacture of transport equipment
030	Shipyards
040	Electricity and heat supply
050	Iron and metal industries
060	Engineering industry
070	Electricity and electronics industry
080	Car industry
090	Navy and road contractors
100	Bricklayer, joiner, and carpentry work
110	Finishing
120	Insulation and installation businesses
130	Printing works and publishing
140	Paper, cardboard and bookbinding industries
150	Wholesale trade
160	Transport of goods
170	Transport of passengers
180	Fire service, lighthouse and salvage corps
190	Textile, clothing, and leather industry
200	Manufacture of wood and wood products
210	Mineral, oil, rubber and plastic products
220	Stone-works, pottery, and glass industry
230	Medical equipment/toys/cameras/etc.
240	Manufacture of industrial chemicals
250	Heavy raw material and semi-manufacture
260	Pharmaceutical industry
271	Office & adm. (transport & wholesale)
272	Office & adm. (service)
273	Finance/ Public office & adm.
274	Private office & adm.
281	Car dealers
282	Garage
283	Shops
290	Supermarkets, department stores etc.
300	Sewers, water- and gas supply
310	Personal care and other services
320	Cleaning, laundries, and dry cleaners
330	Telecommunication
340	Surveillance, armed forces, police etc.
350	Hotels and restaurants
361	Photographers/film & videoproduction
362	Entertainment, culture and sport
363	Libraries and archives
370	Slaughterhouse industry
380	Poultry slaughtering and fish products
390	Beverage industry
400	Manufacture of bread, chocolate, tobacco etc.
410	Manufacture of dairy products
420	Agriculture
430	Horticulture and forestry
440	Hospitals
450	Nursing homes, home care, etc.
460	Child care etc.
471	General practitioners, dentists etc.
472	Health care n.e.c.
480	Education and research
490	Fishing
990	Unstated

Appendix 3. Method outline

Date:

Institute:

Country:

Contact person:

Table 4. Analytical method performance parameters for method XX

Variable	Example	Your data
Analytical method	HPLC, RIA Commercial or in-house#	
Unit	nmol/L, μ mol/L	
Uncertainty*	SD Average concentration Number of runs	
LD (limit of detection)	Number	
How LD was estimated?	3*SD of 20 runs of low concentration sample	
Reference interval	Interval	
Accredited	Yes/no	
Published	Yes/no	

If commercial, please state name of kit and supplier

*Standard deviation (SD) of a sample analysed in several (e.g. 10) different runs or days.

Appendix 4. Project 1.

Salivary cortisol in healthy subjects in Denmark

Date of import: Monday, 19 November 2001

Institute: National Institute of Occupational Health/ Department of Occupational Medicine

Country: Denmark

Contact person: Åse Marie Hansen (Anne Helene Garde, Nanna Eller, Bo Netterstrøm)

Design: Subjects selected randomly. Only samples from a working day.

Reference to project: Eller NH, Netterstrøm B, Hansen AM. (2001) Cortisol in urine and saliva: relations to the intima media thickness, IMT. *Atherosclerosis* vol 159/1:175-85. Subject numbers in the Data base: DK000001-DK000130.

Objective: The objective of the study was to analyse the relations between excretion of cortisol in urine and saliva and the intima media thickness (IMT) of the artery carotis communis.

Design and methods: In a cross-sectional study, 121 healthy participants completed a comprehensive questionnaire. Additionally, three samples of urine and four samples of saliva were collected in the 24 h before the examination, which included an ultrasound examination of the artery carotis communis, measuring height, weight, hip and waist width, blood pressure after 10 min of rest, and analysis of blood samples for cholesterol, high density lipoprotein (HDL)-cholesterol, and HbA(1c). The highest average of three measurements of IMT immediately before carotid bulbous from either left or right side was used in the analyses as the dependent variable IMT.

Results: Values of cortisol in urine adjusted for creatinine were not related to IMT, but the level of salivary cortisol 1 h after awakening and the reactivity in salivary cortisol the first hour after awakening were significantly associated with IMT in women i.e. high cortisol was associated with low IMT. This result remained significant in multiple regression analysis including age, body mass index (BMI), cholesterol, HbA(1c), and alcohol.

Conclusion: The reactivity in salivary cortisol the first hour in the morning might be used in research relating to stress, hormonal changes and early atherosclerosis.

Self reported general health:

Hvordan synes du, dit helbred er alt i alt ? (sæt kun et kryds):

Fremragende	☐
Vældig godt	☐
Godt	☐
Mindre godt	☐
Dårligt	☐

Expected self reported health:

Hvor rigtige eller forkerte er de følgende udsagn for dit vedkommende ? (sæt et kryds i hver linie):

	helt rigtigt	overvejen- de rigtigt	ved ikke	overvejen- de forkert	helt forkert
Jeg forventer, at mit helbred bliver dårligere.	☐	☐	☐	☐	☐

Vitality: Missing

Social support:

De følgende spørgsmål handler om situationer, hvor du har problemer på dit arbejde; sæt et kryds i hver linie.

	ofte	sommetider	sjældent	aldrig
Hvor ofte får du hjælp og støtte fra dine kolleger?	☐	☐	☐	☐
Hvor ofte er dine kolleger villige til at lytte til dine problemer med arbejdet?	☐	☐	☐	☐
Hvor ofte får du hjælp og støtte fra dine nærmeste overordnede?	☐	☐	☐	☐
Hvor ofte er dine nærmeste overordnede villige til at lytte til dine problemer?	☐	☐	☐	☐

Job demand:

De følgende spørgsmål handler om egenskaber ved dit arbejde. Sæt kryds ved det svar, der passer bedst på din situation (et kryds i hver linie)

	ofte	sommetider	sjældent	aldrig
Er det nødvendigt at arbejde hurtigt ?	☐	☐	☐	☐
Har du tid nok til at nå det hele ?	☐	☐	☐	☐

Job control:

Hvor ofte passer følgende på dit arbejde? (et kryds i hver linie)

	ofte	sommetider	sjældent	aldrig
Andre tager beslutninger om mit arbejde.	☐	☐	☐	☐
Jeg har indflydelse på mit arbejdstempo.	☐	☐	☐	☐
Jeg har en del at skulle have sagt i beslutninger	☐	☐	☐	☐

om mit arbejde.

Jeg kan bestemme en pause.	☐	☐	☐	☐
Jeg har indflydelse på, hvem jeg arbejder sammen med.	☐	☐	☐	☐
Jeg har en hel del indflydelse på planlægningen af mit arbejdsmiljø.	☐	☐	☐	☐

De følgende spørgsmål handler om egenskaber ved dit arbejde. Sæt kryds ved det svar, der passer bedst på din situation (et kryds i hver linie)

	ofte	sommetider	sjældent	aldrig
Har du indflydelse på, hvordan du udfører dit arbejde ?	☐	☐	☐	☐
Har du indflydelse på, hvad du laver på arbejdet ?	☐	☐	☐	☐

Extrinsic effort:

Vær venlig at angive i hvilken grad du er enig eller uenig i følgende udsagn. Svar venligst på alle!

	helt uenig	uenig	enig	helt enig
Jeg er ofte nærtagende over for kritik.	☐	☐	☐	☐
Jeg er fuld af ambitioner.	☐	☐	☐	☐
Selv den mindste forstyrrelse generer mig.	☐	☐	☐	☐
Hvis noget skal gøres rigtigt, må jeg hellere gøre det selv	☐	☐	☐	☐
Jeg ynder at bevise, at andre tager fejl.	☐	☐	☐	☐
Det er en sport for mig at være lidt bedre eller hurtigere end andre.	☐	☐	☐	☐

Reward:

Vær venlig at angive i hvilken grad du er enig eller uenig i følgende udsagn. Svar venligst på alle!

	helt uenig	uenig	enig	helt enig
Når nogen hindrer mig i at gøre min pligt, kan jeg blive meget ophidset.	☐	☐	☐	☐
Jeg bliver oftere vred på andre, end godt er.	☐	☐	☐	☐
Jeg kommer let i tidnød, når jeg arbejder.	☐	☐	☐	☐
Det sker tit, at jeg tænker på mit arbejde, lige når jeg vågner.	☐	☐	☐	☐
Det ærgrer mig, hvis jeg ikke løser mine opgaver 100 %.	☐	☐	☐	☐
Jeg vil ikke have, at andre gør mit arbejde.	☐	☐	☐	☐
Jeg bliver skuffet, når mit arbejde ikke bliver anerkendt..	☐	☐	☐	☐
Jeg bliver irriteret, når andre er langsomme i opfattelsen.	☐	☐	☐	☐
Når jeg kommer hjem fra arbejdet, har jeg let ved at koble af	☐	☐	☐	☐
Mennesker nær på mig siger, jeg ofrer mig for meget for mit arbejde	☐	☐	☐	☐
Jeg bliver først rigtig tilfreds, hvis jeg klarer noget bedre, end jeg havde regnet med.	☐	☐	☐	☐

Vær venlig at angive i hvilken grad du er enig eller uenig i følgende udsagn. Svar venligst på alle!

	Helt uenig	uenig	enig	helt enig
Jeg kommer let i tidnød, når jeg arbejder.	☐	☐	☐	☐
Det sker tit, at jeg tænker på mit arbejde, lige når jeg vågner.	☐	☐	☐	☐
Når jeg kommer hjem fra arbejdet, har jeg let ved at koble af	☐	☐	☐	☐

Mennesker nær på mig siger, jeg ofrer mig for meget for mit arbejde	☐	☐	☐	☐
Jeg bliver aldrig færdig med mit arbejde. Selv om aftenen kører tankerne om rundt i mit hoved.	☐	☐	☐	☐
Hvis jeg udskyder noget, jeg skulle have gjort i dag, har jeg svært ved at sove om natten	☐	☐	☐	☐

Method description for project 1

Date: 20. November 2001

Institute: National Institute of Occupational Health

Country: Denmark

Contact person: Helene Garde

Table 4. Analytical method performance parameters for method 1

Variable	Example	Your data
Analytical method	HPLC, RIA	RIA
Unit	Commercial or in-house [#]	Spectria, Orion Diagnostica
Uncertainty*	nmol/L, μ mol/L	nmol/L
	SD	1.2 nmol/L and 4.9 nmol/L
	Average concentration	11.5 nmol/L and 49.2 nmol/L
	Number of runs	10 and 10
LD (limit of detection)	Number	1.6 nmol/L
How LD was estimated?	3*SD of 20 runs of low concentration sample	3*SD of 20 runs of low concentration sample
Reference interval	Interval	1.2-61.8 nmol/L (kit-insert)
Accredited	Yes/no	No
Published	Yes/no	(Hansen et al., 2003, pp. 1-9)

*Standard deviation (SD) of a sample analysed in several (e.g. 10) different runs or days.

[#] If commercial, please state name and supplier

Appendix 5. Project 2.

Psychophysiological reactions to telework

Date of import: Thursday, 4 April 2002

Institute: Dept Psychology, Stockholm university

Country: Sweden

Contact person: Ulf Lundberg (Petra Lindfors)

Design: Field-study. Repeated measures design. Participants employed at a government authority. Samples from workday at office, workday at home (telework), and relaxation at home.

Reference to project: Boundaryless work

Subject numbers in the Data base: S000001-S000023

Objective: The objective of the study was to compare psychophysiological arousal three sessions: 1) work at the office, 2) work at home (telework), and 3) relaxation at home.

Design and methods: In a cross-sectional field-study, including 23 healthy women and men, saliva cortisol was sampled beginning about 15 minutes after awakening with continued sampling approximately every second hour throughout the day and evening.

Results: There were no significant differences in saliva cortisol across the three sessions.

Conclusion: There were no relationships between telework and saliva cortisol. Samples collected from September to December 1999.

Method performance for project 2

Date: 24. April 2002

Institute: Department of Biological Psychiatry, University of Stockholm

Country: Sweden

Contact person: Ann-Christine Sjöbeck

Table 4. Analytical method performance parameters for method 2

Variable	Example	Your data
Analytical method	HPLC, RIA Commercial or in-house [#]	RIA Spectria, Orion
Unit	nmol/L, μ mol/L	nmol/L
Uncertainty*	SD Average concentration Number of runs	From kit-insert
LD (limit of detection)	Number	From kit-insert
How LD was estimated?	3*SD of 20 runs of low concentration sample	From kit-insert
Reference interval	Interval	From kit-insert
Accredited	Yes/no	No
Published	Yes/no	No

[#] If commercial, please state name of kit and supplier

*Standard deviation (SD) of a sample analysed in several (e.g. 10) different runs or days.

Appendix 6. Project 3.

Effects of repetitive work on urinary adrenaline and noradrenaline

Date of import: 4/4 2002

Institute: Dept. of Occupational and Environmental Medicine, Lund University Hospital

Country: Sweden

Contact person: Palle Ørbæk

Design: Field-study. Repeated measures design. Samples from 4 work-days and at home.

Reference to project: Garde AH, Hansen ÅM, Persson R, Ohlsson K, Ørbæk P. (2002) Physiological responses measured in urine and saliva to working at different production lines(2003) Stress and Health. 19(5) 297-306.

Subject numbers in the database: S000024-S000040.

Abstract:

The aim of the present study was to investigate physiological effects of highly similar production systems with different degree of automation by use of urinary catecholamines and cortisol as well as salivary cortisol. Furthermore, it was studied whether the physiological response was related to real-time self-reports in terms of feelings of positive and negative arousal, physical exertion, and sleepiness. Sixteen healthy women sorting wooden slats participated in the study. The work was highly repetitive and demanded intense concentration and rapid qualified decisions. The women rotated between three production systems with varying degrees of mechanisation. Real-time logbooks were filled in and urine was collected five times and saliva seven times on four workdays and a day off. When working at the most automated production system urinary concentrations of adrenaline and noradrenaline were 14% lower compared to when working at the other production systems. For salivary cortisol, the profile over the day differed between production systems. The type of production system did not affect urinary cortisol. Feelings of positive and negative arousal were associated with increased concentrations of urinary adrenaline, while sleepiness was associated with lower salivary cortisol. These associations were independent of the relationship between production systems and biomarkers. In conclusion, decreased physiological arousal

was observed in response to increased automation and real-time self-reports appeared to be related to specific physiological systems.

Questionnaire used:

Background questionnaires to be filled in at home and on-site Monday morning, before starting to work at 1400 h comprise: Working life and employment history - previous and present diseases - medication – menstrual cycle - alcohol and smoking habits - Subjective health - Pain drawing - Demand and Control and Support (revised version)- Social Network - General Health Questionnaire-30 (GHQ-30) - The Swedish Occupational Fatigue Inventory-20 (SOFI-20) - State-Trait Anxiety Inventory-Trait scale (STAI-T) - Marlowe-Crowne Social Desirability scale - The Stress/Energy inventory.

Real-time self-assessments will be done from Monday evening and during the workweek until the following Monday morning. They comprise: The Stress/Energy Inventory - SOFI-20 – Borg's CR-10 - Karolinska Sleepiness Scale - Karolinska Sleep Diary – Coffee/tea consumption - Work-group climate when filling in the answers.

Construction of Scales: Dokumentation for Tarkett-projektet.

Nordat14: Smoking.

Röker du?	1 ☐ Ja
	2 ☐ Nej
Har du rökt tidigare men slutat?	1 ☐ Ja
	2 ☐ Nej

Nordat15: Tobacco.

Om du röker, fyll i den mängd som bäst motsvarar dina genomsnittliga rökvanor	1 ☐ Tillfällighetsrökare
	2 ☐ 1-7 cig/dag
	3 ☐ 8-15 cig/dag
	4 ☐ 16-25 cig/dag
	5 ☐ Mer än 25 cig/dag
	6 ☐ Pipa ____ g/v (1.3)

Kommentarer:

1-7 cigaretter pr dag blev kodet som 4 cigaretter pr dag
8-15 cigaretter pr dag blev kodet som 12 cigaretter pr dag
16-25 cigaretter pr dag blev kodet som 20 cigaretter pr dag

Nordat16: Alcohol.

Hur många dagar av 30-dagarsperioden drack du öl (ej lättöl)?	[]	Antal dagar (max 30)
På en sådan dag, hur mycket öl (ej lättöl) drack du i allmänhet?	[]	Antal flaskor (33 cl) per dag
	[]	Antal burkar (50 cl) per dag
Hur många dagar av 30-dagarsperioden drack du vin?	[]	Antal dagar
På en sådan dag, hur mycket vin drack du i allmänhet?	[]	Antal glas (12 cl) per dag
	[]	Antal halvflaskor (37 cl) per dag
	[]	Antal helflaskor (75 cl) per dag
Hur många dagar av 30-dagarsperioden drack du sprit, t ex vodka, brännvin eller whisky?	[]	Antal dagar (max 30)
På en sådan dag, hur mycket sprit drack du i allmänhet?	[]	Antal glas (4-6 cl)/drinkar per dag
	[]	Antal halvflaskor (37 cl) per dag
	[]	Antal helflaskor (75 cl) per dag

Kommentar:

Ovenstående spørgsmål er anvendt til at beregne mængden af indtaget alkohol (se nedenfor). Inden da svarede personerne først på spørgsmålet: Hur många dagar under den föregående 30-dagars perioden drack du alkohol?

Mængden af alkohol blev bestemt som summen af antal dage, der blev drukket, gange det gennemsnitlige antal genstande, for hver type alkohol.

33 cl øl, 1 glas vin og et glas sprit (4-6 cl) blev kodet til 1 genstand

50 cl øl blev kodet til 2 genstande

½ flaske vin blev kodet som 3 genstande

1 flaske vin og ½ flaske sprit blev kodet som 7 genstande

1 flaske sprit blev kodet som 15 genstande

Nordat17: Coffee.

Mængden af kaffe blev bestemt ud fra logbøgerne hvor mængden af kaffe siden sidste logbogsnotering blev angivet.

Nordat18: Medication.

Har Du använt något av följande medel (med eller utan recept) under de senaste 6 månaderna?•

Markera med ett svarsalternativ för varje medel!

	Aldrig	Sällan Någon, några ggr	Ibland någon, några ggr/månad	För det mesta Någon, några ggr/vecka	Alltid i stort sett varje dag
Sömnmedel	☐	☐	☐	☐	☐
Lugnande medel	☐	☐	☐	☐	☐
Medel mot depressionssjukdom	☐	☐	☐	☐	☐
Medel mot magont (t ex Losec, Novalucol, Samarin)	☐	☐	☐	☐	☐
Värk eller febernedsättande medel (typ Alvedon, Magnecyl, Doloron)	☐	☐	☐	☐	☐
Blodtryckssänkande medel	☐	☐	☐	☐	☐
Blodfettssänkande medel	☐	☐	☐	☐	☐
Medel mot kärlkramp	☐	☐	☐	☐	☐
Annat:	☐	☐	☐	☐	☐

Om du för närvarande använder läkemedel, ange då vilket/vilka •

Använder du medicin som är utskriven på ☐ Nej
recept?

Ange vilket/vilka

Använder du receptfritt läkemedel och/eller ☐ Nej
naturmedel?

Ange vilket/vilka

Kommentar:

Svaret 'aldrig' til spm. 2.1-2.9 blev kodet som 0.

Øvrige svar blev kodet som 2 (pain killers) for spm 2.3, 4 (cardiovascular, blood pressure) for spm 2.6-2.8, og 8 (other) for 2.1-2.4 og 2.9. I spm 3.1 blev følgende medicin opgivet som altssammen blev kodet som 1 (hormones): pulmicort, 'mot övergångsbesvär', östrogen, pulmicort becotide nasal, clarityn.

Nordat27: Sickness leave.

Hur många dagar har du sammanlagt varit sjukfrånvarande från arbetet under de senaste 12 månaderna?

- 1 ☐ ingen dag
2 ☐ mindre än en vecka
3 ☐ 1-2 veckor
4 ☐ 2-4 veckor
5 ☐ mer än en månad

Kommentar:

'ingen dag' kodes som 5

'mindre än en vecka' kodes som 4

'1-2 veckor' og '2-4 veckor' kodes som 3
'mer än en månad' kodes som 2

Nordat29: Self-reported health

Hur tycker du att ditt allmänna hälsotillstånd har varit under det senaste året?

- 1 ☐ mycket gott
2 ☐ ganska gott
3 ☐ någorlunda
4 ☐ tämligen dåligt
5 ☐ dåligt

Nordat32: Social support

Nedan visas ett antal påståenden. Läs varje påstående och ta ställning till om du håller med om det. Inget svar är rätt eller fel. Tänk inte för länge på varje påstående. Håller du med om följande påståenden?

Jag måste ofta slå av på takten i mitt arbete för att vänta på att arbetskamrater eller andra avdelningar skall bli klara med sina uppgifter

- 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt

Min arbetsledare (chef) bryr sig om dem som arbetar under honom/henne

- 1 ☐ Saknar/saknade arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Min arbetsledare (chef) lyssnar på vad jag har att säga

- 1 ☐ Saknar/saknade arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Min arbetsledare (chef) hjälper mig att få jobbet gjort.

- 1 ☐ Saknar/saknade arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Min arbetsledare (chef) är bra på att få folk att samarbeta

- 1 ☐ Saknar/saknade arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Mina arbetskamrater är duktiga i sina jobb

- 1 ☐ Saknar/saknade arbetskamrater
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Mina arbetskamrater är intresserade av mig som människa

- 1 ☐ Saknar/saknade arbetskamrater
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Mina arbetskamrater är vänliga

- 1 ☐ Saknar/saknade arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Mina arbetskamrater hjälper mig att få jobbet gjort

- 1 ☐ Saknar/saknade arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Kommentar:

Skalaerna beräknas som: Job support totalt: mean (kar19 to kar26).

Svarene ligger alltid mellan 1-5. De standardiseras till 100%: (svar-1)*100/4.

Nordat33: job demands

Nedan visas ett antal påståenden. Läs varje påstående och ta ställning till om du håller med om det. Inget svar är rätt eller fel. Tänk inte för länge på varje påstående. Håller du med om följande påståenden?

- | | |
|---|--|
| Mitt arbete kräver att jag arbetar mycket snabbt | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Mitt arbete kräver att jag arbetar mycket hårt | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Man kräver inte för stor arbetsinsats av mig | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag har tillräckligt med tid för att få arbetet utfört. | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag slipper motstridiga krav från andra | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| I mitt arbete krävs långa perioder av intensiv koncentration på uppgiften | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag avbryts ofta i mina arbetsuppgifter innan de är färdiga och måste senare ta itu med dem | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Mitt arbete är mycket hektiskt (stressigt) | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |

Kommentar:

Skalaerna beräknas som:

Psychological job demands: mean (kar10 to kar11, (5-kar12), (5-kar13), (5-kar14), kar15 to kar18).

Svarene vil alltid ligge mellem 1-4. Standardiseres til 100%: (svar-1)*100/3.

Nordat34: Job control.

Nedan visas ett antal påståenden. Läs varje påstående och ta ställning till om du håller med om det. Inget svar är rätt eller fel. Tänk inte för länge på varje påstående. Håller du med om följande påståenden?

- | | |
|--|--|
| Mitt arbete kräver att jag lär mig nya saker | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Mitt arbete innebär att jag gör samma sak om och om igen | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| I mitt arbete måste man vara påhittig och kreativ | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| I mitt arbete får jag fatta egna beslut | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Mitt arbete kräver stor skicklighet | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |

- | | |
|--|--|
| Jag har mycket lite frihet i att bestämma hur mitt arbete skall utföras | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag får göra många olika saker i mitt arbete | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag har mycket att säga till om vad det gäller det som händer på mitt arbete | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag har möjlighet att utveckla min egen förmåga | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |

Kommentar:

Skalaerne beregnes som:

Job control: mean (kar1, (5-kar2), kar3 to kar5, (5-kar6), kar7 to kar9).

Svarene vil altid ligge mellem 1-4. Standardiseres til 100%: (svar-1)*100/3.

Method description for project 3

Date: 20. November 2001

Institute: National Institute of Occupational Health

Country: Denmark

Contact person: Helene Garde

Table 4. Analytical method performance parameters for method 1

Variable	Example	Your data
Analytical method	HPLC, RIA	RIA
Unit	Commercial or in-house [#]	Spectria, Orion Diagnostica
Uncertainty*	nmol/L, μ mol/L	nmol/L
	SD	1.2 nmol/L and 4.9 nmol/L
	Average concentration	11.5 nmol/L and 49.2 nmol/L
	Number of runs	10 and 10
LD (limit of detection)	Number	1.6 nmol/L
How LD was estimated?	3*SD of 20 runs of low concentration sample	3*SD of 20 runs of low concentration sample
Reference interval	Interval	1.2-61.8 nmol/L (kit-insert)
Accredited	Yes/no	No
Published	Yes/no	(Hansen et al., 2003, pp. 1-9)

*Standard deviation (SD) of a sample analysed in several (e.g. 10) different runs or days.

[#] If commercial, please state name and supplier

Appendix 7. Project 4.

Saliva cortisol and Psychosocial FACTOrS in a population sample of Swedish middle aged women and men

Date of import: Friday, 27 June 2003

Institute: Center for Public Health Science, Linköping University

Country: Sweden

Contact person: Margareta Kristensson, Elisabeth Wilhelm

Reference to project: Kristenson M*, Sjögren E and the LinQuest Group. Saliva cortisol and Psychosocial FACTOrS in a population sample of Swedish middle aged women and men. ICBM. Helsinki, August 29-31, 2002; 155.

Subject numbers in the Data base: S000041-S000320

Introduction: Availability of psychosocial resources protects against disease, while vital exhaustion, hopelessness and depression increase the risk for disease. A possible pathway is the hypothalamic-pituitary-adrenal axis and cortisol dynamics. We earlier reported an attenuated cortisol response to acute stress among people with high vital exhaustion. Aim: To test the hypothesis that availability of psychosocial resources relate to strong cortisol response to stress and low resting cortisol values, with the opposite dynamic for vital exhaustion, hopelessness and depression.

Design: A random sample of 258 men and women, aged 30-65 was investigated. Respondents had, one year earlier, reported on social integration, coping (mastery) and hopelessness. Using postal questionnaires, measures of social support, self-esteem, vital exhaustion and depression were collected. Saliva samples for cortisol measures were collected, at awakening, 30 minutes after awakening (arousal) and resting in the evening during three consecutive days.

Method description of project 4

Date: 25 June 2003

Institute: Folkhälsovetenskapliga Programmen

Institutionen för hälsa och samhälle - IHS

Linköpings universitet

581 83 Linköping

Country: Sweden

Contact person: Margareta Kristensson or Elisabeth Wilhelm

Table 4. Analytical method performance parameters for method 3

Variable	Example	Your data
Analytical method	HPLC, RIA	
Unit	Commercial or in-house#	In house RIA
Uncertainty*	nmol/L, μ mol/L	Nmol/L
	SD	<10%
	Average concentration	
	Number of runs	
LD (limit of detection)	Number	0.43pg/well
How LD was estimated?	3*SD of 20 runs of low concentration sample	
Reference interval	Interval	
Accredited	Yes/no	
Published	Yes/no	Dressendörfer et al. 1993

If commercial, please state name of kit and supplier

*Standard deviation (SD) of a sample analysed in several (e.g. 10) different runs or days.

Appendix 8. Project 5.

Stress reduction at work

Date of import: Wednesday, 23 September 2004

Institute: Dept. of Occupational and Environmental Medicine, Lund University Hospital

Country: Sweden

Contact person: Björn Karlson or Roger Persson

Design: An outcome stratified sample employees (men and women) from seven workplaces in the Southern part of Sweden. Saliva samples collected on a workday.

Reference to project: Hansen ÅM, Høgh A, Persson R., Karlson B, Garde AH, Ørbæk P. (2004) Bullying at work, health outcomes, and physiological stress response. *Psysom. Research* (Submitted).

Subject numbers in the database: S000321- S000778

Introduction: The relationships between bullying or witnessing bullying at work, self-reported health symptoms and physiological stress reactivity were analysed in a sample of 434 employees (292 women and 142 men) from seven workplaces in the Southern part of Sweden. Physiological stress reactivity was measured as cortisol in saliva. Of the respondents, 5% of the women (n = 15) and 5% of the men (n = 7) reported bullying, whereas 9% of the women (n=25) and 11% of the men (n=15) had witnessed bullying at work. The results indicated that the bullied respondents were less satisfied with their jobs, had lower social support from co-workers and supervisors, and they reported more symptoms of somatization, depression, anxiety and negative affectivity than non-bullied respondents. Witnesses of bullying tended to be less satisfied with their jobs compared to non bullied respondents. Concentrations of cortisol in saliva were lower at awakening in bullied respondents compared to non-bullied respondents. Similar results have been reported for people with PTSD and chronic fatigue.

Dokumentation for projektet.**Nordat14: Smoking.**

Röker du? ☐ Ja, dagligen
☐ Ja, men inte alla dagar
☐ Nej

Har du rökt tidigare men slutat? ☐ Ja, slutat senaste halvåret
☐ Ja, slutade för mer än et halvår sedan
☐ Nej

Nordat15: Tobacco.

Om du röker, fyll i den mängd som bäst motsvara dina genomsnittliga rökvanor ☐ cigaretter dagligen ☐ gram piptobak i veckan
☐ cigarrer dagligen ☐ cigariller dagligen

Nordat17: Coffee.

Hur många koppar kaffe (1,5 dl) på en valig dag? ☐ koppar

Nordat18: Medication.

Har Du använt något av följande medel (med eller utan recept) under de senaste 6 månaderna?•
 Markera med ett svarsalternativ för varje medel!

	Aldrig	Sällan Någon, några ggr	Ibland någon, några ggr/månad	För det mesta Någon, några ggr/vecka	Alltid i stort sett varje dag
Sömnmedel	☐	☐	☐	☐	☐
Lugnande medel	☐	☐	☐	☐	☐
Medel mot depressionssjukdom	☐	☐	☐	☐	☐
Medel mot magont (t ex Losec, Novalucol, Samarin)	☐	☐	☐	☐	☐
Värk eller febernedsättande medel (typ Alvedon, Magnecyl, Doleron)	☐	☐	☐	☐	☐
Blodtryckssänkande medel	☐	☐	☐	☐	☐
Blodfettssänkande medel	☐	☐	☐	☐	☐
Medel mot kärlkramp	☐	☐	☐	☐	☐
Annat:	☐	☐	☐	☐	☐

Om du för närvarande använder läkemedel, ange då vilket/vilka •

Använder du medicin som är utskriven på recept? ☐ Nej

Ange vilket/vilka

Använder du receptfritt läkemedel och/eller naturmedel? ☐ Nej

Ange vilket/vilka

Kommentar:

Svaret 'aldrig' til spm. 2.1-2.9 blev kodet som 0.

Øvrige svar blev kodet som 2 (pain killers) for spm 1.4, 1.5 (cardiovascular, blood pressure) for spm 1.6-1.8, og 8 (other) for 1.1-1.3 og 1.9.

Nordat27: Sickness leave.

Hur länge har du sammenlagt varit sjukskriven (25% eller mer) under de senaste 12 månaderna?

☐ dagar ☐ veckor ☐ månader

Nordat29: Self-reported health

Hur tycker du att ditt allmänna hälsotillstånd har varit under det senaste året?

- 1 ☐ mycket bra
2 ☐ bra
3 ☐ någorlunda
4 ☐ dåligt
5 ☐ mycket dåligt

Nordat32: Social support

Läs varje påstående nedan och ta ställning till om du håller med om det. Inget svar är rätt eller fel. Tänk inte för länge på varje påstående.

Håller du med om följande påståenden?

Min arbetsledare (chef) bryr sig om dem som arbetar under honom/henne

- 1 ☐ Saknar arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Min arbetsledare (chef) lyssnar på vad jag har att säga

- 1 ☐ Saknar arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Min arbetsledare (chef) hjälper mig att få jobbet gjort.

- 1 ☐ Saknar arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Min arbetsledare (chef) är bra på att få folk att samarbeta

- 1 ☐ Saknar arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Mina arbetskamrater är duktiga i sina jobb

- 1 ☐ Saknar arbetskamrater
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Mina arbetskamrater är intresserade av mig som människa

- 1 ☐ Saknar arbetskamrater
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Mina arbetskamrater är vänliga

- 1 ☐ Saknar arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Mina arbetskamrater hjälper mig att få jobbet gjort

- 1 ☐ Saknar arbetsledare
2 ☐ Håller inte alls med
3 ☐ Håller inte med
4 ☐ Håller med
5 ☐ Håller med fullständigt

Kommentar:

Skalaerna beräknas som: Job support totalt: mean (kar19 to kar26).

Svarene ligger alltid mellan 1-5. De standardiseras till 100%: (svar-1)*100/4.

Nordat33: job demands

Läs varje påstående nedan och ta ställning till om du håller med om det. Inget svar är rätt eller fel. Tänk inte för länge på varje påstående.

Håller du med om följande påståenden?

- | | |
|---|--|
| Mitt arbete kräver att jag arbetar mycket snabbt | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Mitt arbete kräver att jag arbetar mycket hårt | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Man kräver inte för stor arbetsinsats av mig | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag har tillräckligt med tid för att få arbetet utfört. | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag slipper motstridiga krav från andra | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| I mitt arbete krävs långa perioder av intensiv koncentration på uppgiften | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag avbryts ofta i mina arbetsuppgifter innan de är färdiga och måste senare ta itu med dem | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Mitt arbete är mycket hektiskt (stressigt) | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |

Kommentar:

Skalaerne beregnes som:

Psychological job demands: mean (kar10 to kar11, (5-kar12), (5-kar13), (5-kar14), kar15 to kar18).

Svarene vil altid ligge mellem 1-4. Standardiseres til 100%: (svar-1)*100/3.

Nordat34: Job control.

Läs varje påstående nedan och ta ställning till om du håller med om det. Inget svar är rätt eller fel. Tänk inte för länge på varje påstående.

Håller du med om följande påståenden?

- | | |
|---|--|
| Mitt arbete kräver att jag lär mig nya saker | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Mitt arbete innebär att jag gör samma sak om och om igen | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| I mitt arbete måste man vara påhittig och kreativ | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| I mitt arbete får jag fatta egna beslut | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Mitt arbete kräver stor skicklighet | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag har mycket lite frihet i att bestämma hur mitt arbete skall utföras | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |

- | | |
|--|--|
| Jag får göra många olika saker i mitt arbete | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag har mycket att säga till om vad det gäller det som händer på mitt arbete | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |
| Jag har möjlighet att utveckla min egen förmåga | 1 ☐ Håller inte alls med
2 ☐ Håller inte med
3 ☐ Håller med
4 ☐ Håller med fullständigt |

Kommentar:

Skalaerne beregnes som:

Job control: mean (kar1, (5-kar2), kar3 to kar5, (5-kar6), kar7 to kar9).

Svarene vil altid ligge mellem 1-4. Standardiseres til 100%: (svar-1)*100/3.

Method description for project 5

Date: 20. November 2001

Institute: National Institute of Occupational Health

Country: Denmark

Contact person: Helene Garde

Table 4. Analytical method performance parameters for method 1

Variable	Example	Your data
Analytical method	HPLC, RIA Commercial or in-house [#]	RIA Spectria, Orion Diagnostica
Unit	nmol/L, μ mol/L	nmol/L
Uncertainty*	SD Average concentration Number of runs	1.2 nmol/L and 4.9 nmol/L 11.5 nmol/L and 49.2 nmol/L 10 and 10
LD (limit of detection)	Number	1.6 nmol/L
How LD was estimated?	3*SD of 20 runs of low concentration sample	3*SD of 20 runs of low concentration sample
Reference interval	Interval	1.2-61.8 nmol/L (kit-insert)
Accredited	Yes/no	No
Published	Yes/no	(Hansen et al., 2003, pp. 1-9)

*Standard deviation (SD) of a sample analysed in several (e.g. 10) different runs or days.

[#] If commercial, please state name and supplier

Appendix 9. Project 6.

Svea

Date of import: September 2003, October/November 2003 and February 2004.

Institute: Department of Biological and Medical Psychology, University of Bergen.

Country: Norway

Contact person: Robert Murison , Department of Biological and Medical Psychology, University of Bergen.

Design: Saliva samples of 52 male shift workers, 12 hours shift, 10 hours on, 14 hours off, 21 days on, 21 days off, building a tunnel in Svea (Spitzbergen, 78° N), 8 months observation period, recorded subjective health complaints and psychosocial factors (coping, demand, control).

Reference to project: Health effects of 21 days shift periods and long work hours in an isolated and extreme environment. Waage, S., Moen, B.E., Bjorvatn, B., Odeen, M., Hollund, B.E., Murison, R. and Eriksen, H.R (2004), International journal of behavioral medicine (Eigth International Congress Society of Behavioral Medicine).

Subject numbers in the Data base: N000001-N000054

Introduction: 52 male tunnel workers (age 21 – 61) participated in the study. They filled out questionnaires and collected four cortisol saliva samples on day 14 of the work period (1: wake up time, 2: wake up time + 30 min., 3: wake up time + 6 hour, 4: wake up time + 12 hour). This was done three times during an 8 months observation period. For each 21 days work period, the workers were either on day or night shift. For the 21 days off period the workers returned to their homes in Norway.

Questionnaire used:

All data were measured by Norwegian versions of questionnaires.

Subjective health complaints, SHC inventory.

Reference: R., Ihlebæk, C. and Ursin, H. (1999). A scoring system for subjective health complaints (SHC). Scandinavian Journal of Public Health, 1, 63-72.

A short version of Utrecht Coping List (UCL)

Reference: Schreurs, P.J.G., Tellegen, B., Van De Villige, G., Brosscot, J.F. (1988). De Utrechtse Coping Lijst: Handleiding. Swets en Zeitlinger, Lisse.

Schreurs, P.J.G., Van De Villige, G., Brosscot, J.F. and Grau, G. (1993). De Utrechtse Copinlijst: UCL. Handleiding, 2nd rev.Edn. Swets en Zeitling, Lisse.

Demand/control and social support model.

Reference: Karasek, R. and Theorell, T. (1990). Healthy Work. Stress, Productivity and the Reconstruction of Working Life. Basic Books, HarperCollins, USA.

Theorell, T., Perski, A., 'akerstedt, T., Sigala, F., Ahkberg-Hulten, G., Svensson, J. and Eneroth, P. (1988). Changes in job strain in relation to changes in psychological state. Scandinavian Journal of Work, Environment and Health, 14(3), 189-196.

Theorell, T., Michelsen, H. & Nordemar, R., Music 1 study group (1993). Validitetsprövning av psykososiale indexbuildingar. I: Hagberg, M. & Hogstedt, C. red. Stockholmsundersökningen 1. Stockholm. Music Books, 163-177.

Construction of Scales:

Subjective health complaints (SHC) were measured by 29 items on subjective somatic and psychological complaints experienced during the last 30 days, using the SHC inventory. Severity was scored on a four-point scale, from 0 –no complaints to 3 – severe complaints. Five sub-scales were computed; musculoskeletal pain (headache, neck pain, upper back pain, low back pain, arm pain, shoulder pain, migraine and leg pain), pseudo neurology (palpitation, heat flushes, sleep problems, tiredness, dizziness, anxiety and sadness), gastrointestinal problems (heartburn, epigastric discomfort, ulcer/non ulcer dyspepsia, stomach pain, gas discomfort, diarrhoea and constipation), allergy and flu.

Coping was measured by the Instrumental mastery oriented coping factor from the CODE (Eriksen et al., 1997), based on the short version of Utrecht Coping List (UCL) (Schreurs et al., 1988, 1993). To get a high score on instrumental mastery oriented coping, the score on active problem solving from UCL must be high, and the score on avoidance and passive expectancy, and depressive reaction pattern from the UCL must be low. *Reference:* Eriksen, H.R., Olff, M. and Ursin, H. (1997) The CODE: a revised battery for coping and defence and its relations to subjective health. Scandinavian Journal of Psychology, 38(3), 175-182.

Job demands were measured by five questions from the demand dimension in the short Swedish version of the demand/control model (Theorell et al., 1988). The job demands subscale is the sum of five items inquiring about excessive work, conflicting demands, insufficient time to work, fast pace, and working hard. Questions were scored on a four-point scales ranging from strongly disagree to strongly agree.

Job control was measured by 9 questions from the control dimension in the short version of the demand/control model (Theorell et al., 1988). The Job control scale is the sum of two subscales: skill discretion as measured by six items (learning new things on the job, ability to develop new skills, job requiring skill, task variety, work not repetitious, job requiring creativity) and decision authority as measured by three items (freedom to make decisions, choice about how to perform work, having a lot of say in the job). Questions were scored on a four-point scales ranging from strongly disagree to strongly agree.

Social support was measured by six questions from the Swedish version of The Job Content Questionnaire (Theorell et al., 1993). The social support scales include support from co-workers and supervisors. For each item the respondents could choose from one of four responses ranging from strongly disagree to strongly agree.

Method description for project 6

Date: 15. November 2004

Institute: Department of Biological and Medical Psychology, University of Bergen.

Country: Norway

Contact person: Robert Murison, Department of Biological and Medical Psychology, University of Bergen.

Table 4. Analytical method performance parameters for method 4

Variable	Example	Your data
Analytical method	HPLC, RIA Commercial or in-house [#]	RIA DPC coat a count
Unit	nmol/L, μ mol/L	nmol/l
Uncertainty*	SD Average concentration Number of runs	1,3 12,1 14
LD (limit of detection)	Number	0,7
How LD was estimated?	3*SD of 20 runs of low concentration sample	Used RIA-smart Curve fit SPLINE
Reference interval	Interval	No
Accredited	Yes/no	No
Published	Yes/no	

[#] If commercial, please state name of kit and supplier

*Standard deviation (SD) of a sample analysed in several (e.g. 10) different runs or days.