



# Adaptation of an ICF-Based Questionnaire for Vocational Rehabilitation in Germany

# 5

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## Abstract

Due to demographic changes, the welfare state principle and the solidarity principle are under scrutiny. Social security funds must now consider European labor mobility and immigration. The healthcare market is a growth market. Inpatient rehabilitation, however, does not grow proportionally to the market due to the existing legal framework. The introduction of the Social Code (SGB) Ninth Book (IX) and the definition of disability based on the bio-psycho-social model of the International Classification of Functioning, Disability, and Health (ICF) and the expert assessment of the need for rehabilitation lead to the ICF increasingly being implemented. An effective tool in this setting is the standardized Work Rehabilitation Questionnaire (WORQ), based on the ICF, which is freely available in six languages. Motivation plays a pioneering role in rehabilitation, especially for Return to Work (RTW). The aim of this study was to cross-culturally adapt the WORQ to German and to investigate whether the WORQ in combination with the Diagnostic Tool for Work Motivation (DIAMO) can be used to target suitable rehabilitation measures and improve RTW. First, a cross cultural adaptation of the WORQ is needed in a German rehabilitation setting. This adaptation

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requires interdisciplinary collaboration between the developers of the WORQ, independent advisors, patients, and other scientists. This study report on the quantitative results and recommendation for clinical practice is discussed in this chapter.

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## 5.1 Introduction

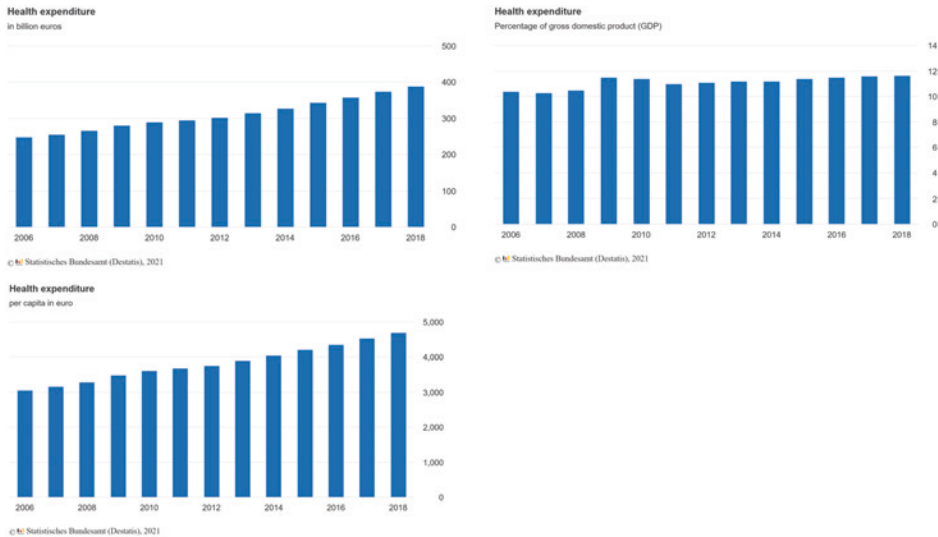
*Health is not everything – but without health everything is nothing.*  
-- Arthur Schopenhauer (1788–1860), German philosopher

The improvement in prevention, the rehabilitation process in clinics and outpatient facilities, is necessary to enable work and integration. The current public discussions about the cost explosion in health care, the demographic change, the increase in the statutory retirement age after 2030 (Bofinger et al., 2016, p. 38), demography collective agreements (Zumbeck, 2017, p. 16), and workplace design in line with the concept of ‘*Arbeit 4.0*’ (Braun, 2016, pp. 13–16) give rise to further considerations about the targeted and more efficient use of the available funds with regard to treatment success (Belzl, 2006). The desire of the *Techniker Krankenkasse* (TK) to collect and evaluate personal member data by means of fitness bracelets (Becker, 2016, p. 4), shows how up-to-date and important the topic of effective health prevention and rehabilitation by social insurance institutions is. As part of a feasibility study, we evaluated the benefits of the International Classification of Functioning, Disability, and Health (ICF; World Health Organization, 2011) and the holistic bio-psycho-social model for assessing needs and participation in working life for a cross-agency use of each institution for implementation (*Bundesministerium für Arbeit und Soziales*, 2016, S. 27, 28; Schubert et al. 2014, p. 133). The ICF is a language with an internationally recognized vocabulary standard for uniform communication in interdisciplinary communication (Vreeman and Richoz, 2015). This allows for an assessment of individual needs and the required service provision in the context of dynamic process control (Schubert et al., 2014, p. 133).

In 2018, 411 billion euros were spent on health services in Germany (*Statistisches Bundesamt*, 2020), which is 4.944 euros per inhabitant. This is an increase of 96 billion euros or 23% compared to 2013 (*Statistisches Bundesamt*, 2016b; 2020). Figure 5.1 shows the development of health expenditure from 2005 to 2018 in euros.

It should be noted that within health expenditure, according to the *Statistisches Bundesamt*, only expenditure on the final consumption of health goods, services and investments in the health sector is included (excluding intermediate consumption such as the production of medicines and sales to pharmacies). In addition, research and development costs are included, provided they are carried by the issuers. Expenses for care, occupational health insurance and health measures for reintegration into working life are also considered health expenditure (*Statistisches Bundesamt* [Destatis], 2017a). Not included are costs for wellness, fitness, or accommodation in nursing homes.

This chapter deals with the framework conditions set out in the *Sozialgesetzbuch* (SGB), Ninth Book (IX)—Rehabilitation and Participation of Disabled Persons, 2001.

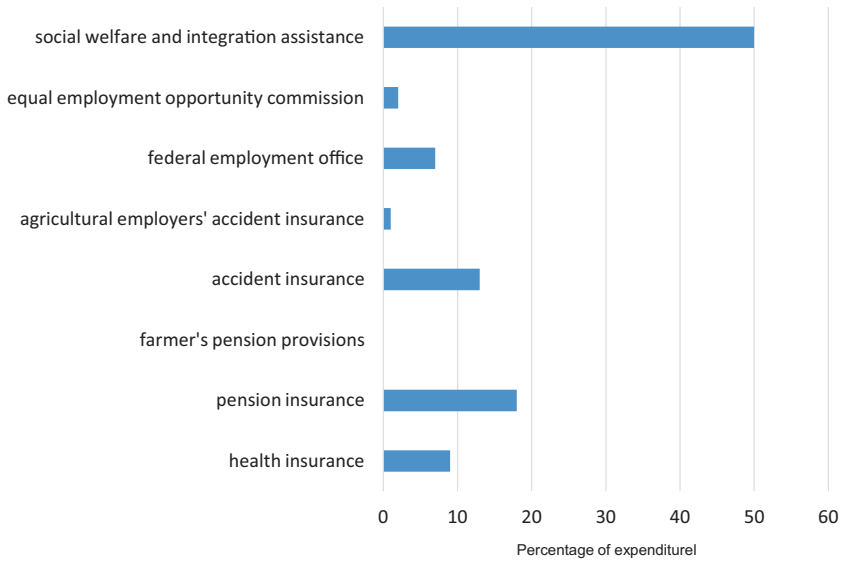


**Fig. 5.1** Health Expenditure 2005–2018. (Source Statistisches Bundesamt, 2016a; 2020)

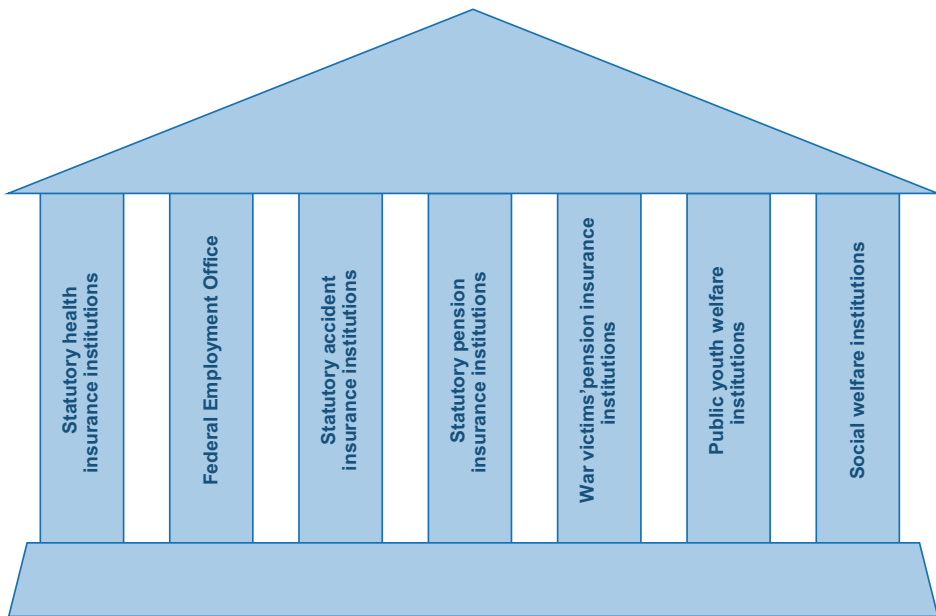
Rehabilitation is an interdisciplinary research field of psychology, social psychology, medicine, sociology, ethics, data protection, and law. In 2015, around 7.6 million persons were severely disabled, that is, 9.3% of the total population in Germany, 51% of which were men. Persons who have been granted a degree of disability of 50 % or more by the healthcare authorities and given a valid ID card, are considered to be severely disabled (*Statistisches Bundesamt*, 2016d). The numbers increase with the increasing life expectancy in Germany. More than one billion people in the world live with some form of disability, of whom nearly 200 million experience considerable difficulties in functioning (World Health Organization, 2011, p. xi). Spending on rehabilitation amounted to € 32.6 billion in 2014 (*Reha-Info*, 2016, S. 1). Figure 5.2 shows the percentages of expenditures by each carrier.

The participation services are subdivided into four service groups within the meaning of § 5 SGB IX. These are the services for medical rehabilitation, support and supplementary benefits, benefits for participation in the community life as well as benefits for participation in working life, for example, retraining. The costs of the partial hire services will be allocated to them according to the tasks of the individual carriers. The house of rehabilitation providers within the meaning of § 6 SGB IX illustrates this in Fig. 5.3.

In Germany, the number of inpatient rehabilitation patients decreased by 0.2% in 2015 compared to the previous year. In 2015, 19.2 million rehabilitation patients were hospitalized in hospitals. The 1.153 prevention or rehabilitation facilities differ in ownership or legal form according to public (229), non-profit (300), and private (624) institutions. The 624 private preventive or rehabilitation facilities are dominant in the market (*Statistisches Bundesamt*, 2016c). The participation of the rehabilitation facilities is



**Fig. 5.2** Expenditure Ratio (in Percentage) of € 32.6 Billion in Rehabilitation Spending in Rehabilitation Institutions in 2014

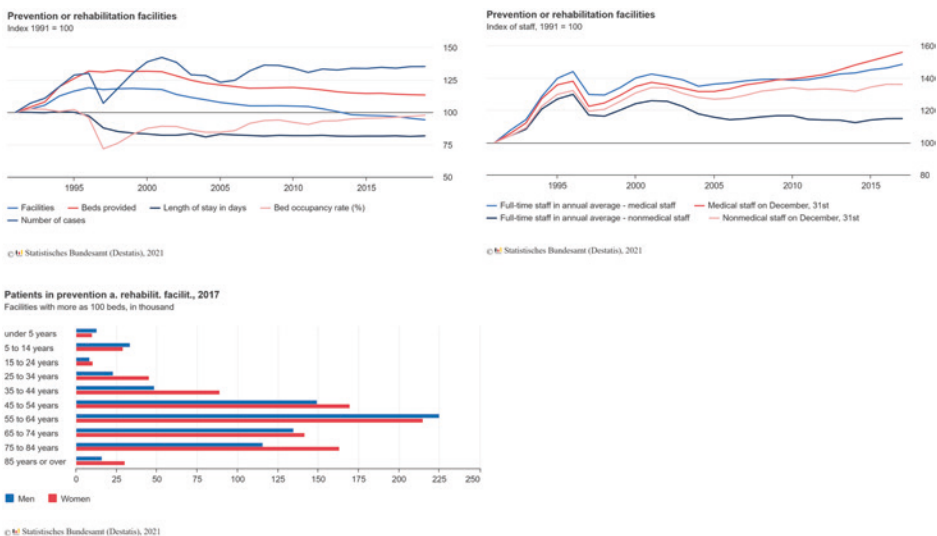


**Fig. 5.3** House of Rehabilitation Institutions according to § 6 SGB IX

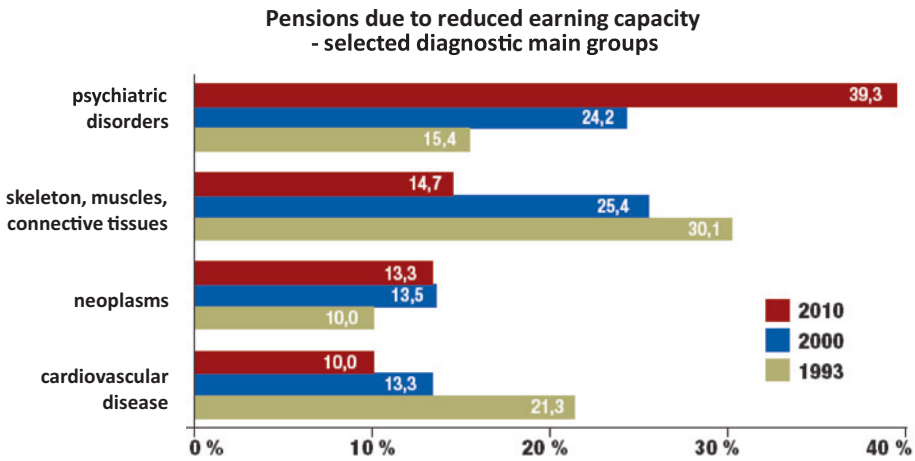
approved by the German Pension Insurance for inpatient medical rehabilitation either after having gone through inpatient hospital treatment (e.g. after surgery or chemotherapy) (AHB) (*Deutsche Rentenversicherung Bund, 2006*), or following the requirements of the statutory accident insurance at the ‘Professional Association’s stationary treatment (BGSW)’ for injuries of the musculoskeletal system according to § 34 SGB VII (*Deutsche Gesetzliche Unfallversicherung und Sozialversicherung für Landwirtschaft, Forst und Gartenbau, 2016*).

The distribution by facilities, staff and age group in the prevention or rehabilitation facilities is shown in Fig. 5.4. Inpatient treatments include, in the context of accident insurance, the professional association’s stationary treatment (BGSW), e.g. after severe injuries of the musculoskeletal system, and the complex inpatient rehabilitation (KSR), e.g. after a cross-sectional injury (Simmel et al., 2014, pp. 524–529). Pensions for reduced work capacity due to mental disorders more than doubled during the period from 1993 to 2010 (Fig. 5.5). In Germany, the legal framework is designed and implemented by the *Sozialgesetzbuch* (SGB) or by regulations and guidelines. The importance of the topic stems from the current discussion on demographic change, skills shortages, legislation, prevention, or cost restraints on public budgets.

The rehabilitation, prevention, and participation are interdisciplinary scientific research fields, which overlap with psychology, law, social sciences, medicine, sports science, and business administration. As a result, a definition of the term in this article is



**Fig. 5.4** Prevention and Rehabilitation Facilities by Facilities, Staff and Patients by Age Group 2014. (Source Statistisches Bundesamt, 2015, table time series updated in 2021, p. 7)



**Fig. 5.5** Pensions due to Reduced Earning Capacity. (Source Adapted from Bering and Schmidt-Ohlemann, 2013, p. 3)

essential in order to create a common level of understanding. In 1948, the WHO defined health as follows:

*“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.”* (World Health Organization, 2011; Klein, 2015, p. 34).

In the delimitation of the health term, the disability term is defined according to the decision of the European Court of Justice Kaltoft ECJ (12/18/2014, case C-354/13):

An illness of an employee is considered a disability when it constitutes

*“a limitation which results in particular from physical, mental or psychological impairments which in interaction with various barriers may hinder the full and effective participation of the person concerned in professional life on an equal basis with other workers, and the limitation is a long-term one”* (Albert et al. 2016, p. 397).

In the individual European member states, the goals and definitions for the term disability and thus the disability policy are different (Maschke, 2008, p. 5775). In Germany, the Ninth Book of the Social Code—Rehabilitation and Participation of Disabled Persons—(Neuntes Buch SGB IX) defines disability in § 2 (1):

*Menschen sind behindert, wenn ihre körperliche Funktion, geistige Fähigkeit oder seelische Gesundheit mit hoher Wahrscheinlichkeit länger als sechs Monate von dem für das Lebensalter typischen Zustand abweichen und daher ihre Teilhabe am Leben in der Gesellschaft beeinträchtigt ist. Sie sind von Behinderung bedroht, wenn die Beeinträchtigung zu erwarten ist.* (Neuntes Buch SGB IX, Bundesgesetzblatt i. d. F. of 06/19/2001 BGBl. I, p. 1046, 1047; last changed at 07/26/2016 BGBl. I, pp. 1824, 1837, § 2 (1))

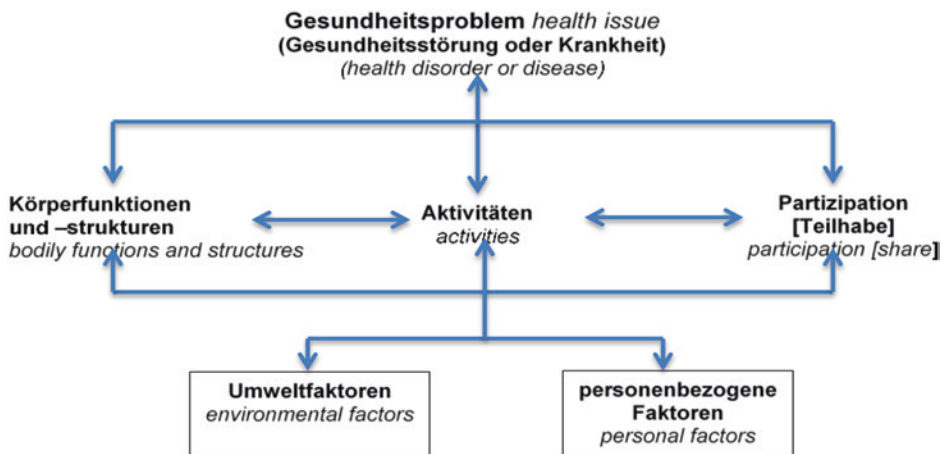
*People are disabled if their physical function, mental ability, or mental health is likely to be more than six months away from the typical state of life, and therefore their participation in society is impaired. You are at risk of disability if the impairment is expected. (Own Translation)*

In rehabilitation and prevention practice, these and other framework conditions should be directly integrated into practice-oriented and applicable organizational procedures.

The International Classification of Diseases (ICD) has been in existence for more than 100 years, and its amendment, the International Classification of Functioning, Disability, and Health has existed for more than 16 years (Stucki, 2012, p. 1). In order to understand the ICF concept of functioning, it is necessary to compare the definitions made in the previous section. Disability is seen in relation to functioning. The domain ranges from complete functioning to complete disability on a gradual scale as illustrated in Fig. 5.6 (Bickenbach, 2012 p. 5). The ‘functioning’ includes the body functions, body structures, and activities and participation. The integrative bio-psycho-social model of functioning, as illustrated in Fig. 5.7, shows the mutual influences of the individual factors and components (Rauch et al., 2012, p. 9). The terms used in the model are described in more detail in Table 5.1.



**Fig. 5.6** Illustration of Functioning, e.g. Hearing According to the ICF



**Fig. 5.7** The Integrative Bio-psycho-social Model of Functioning, Disability, and Health

**Table 5.1** Definition of the Bio-psycho-social Model of Functioning, Disability, and Health (Source Rauch et al., 2012, p. 10)

Positive	Negative
Body functions: physiological and psychological functions	Damage in terms of a reduction in body function or structure
Body structures: anatomical body parts, e.g., the eye, the foot, the heart, and the individual components	
Activity: to be able to perform an action or task e.g. climbing stairs	Impairment: problems with the execution of the activity e.g. climbing stairs with aids.
Participation: participation in life situations, e.g. exercising a profession	Impairment of participation; Impairments of participation in life situations, e.g. toilets for the disabled are not available in every restaurant
Facilitators	Barriers
Environmental factors (social, material and attitude-related) can be conducive or disabling	
Definition of the components of functioning, disability, and health personal factors can be conducive or disabling	

To develop a common understanding of the ICF, a hierarchical coding system has been suggested. The ICF has a hierarchical structure and consists of two parts: “functioning and disability” and “contextual factors”.

These two factors again consist of two components each:

- “Functioning and disability”
  - Body functions and structures
  - Activities and participation
- “Contextual factors”
  - Environmental factors
  - Person-related factors (not yet defined)

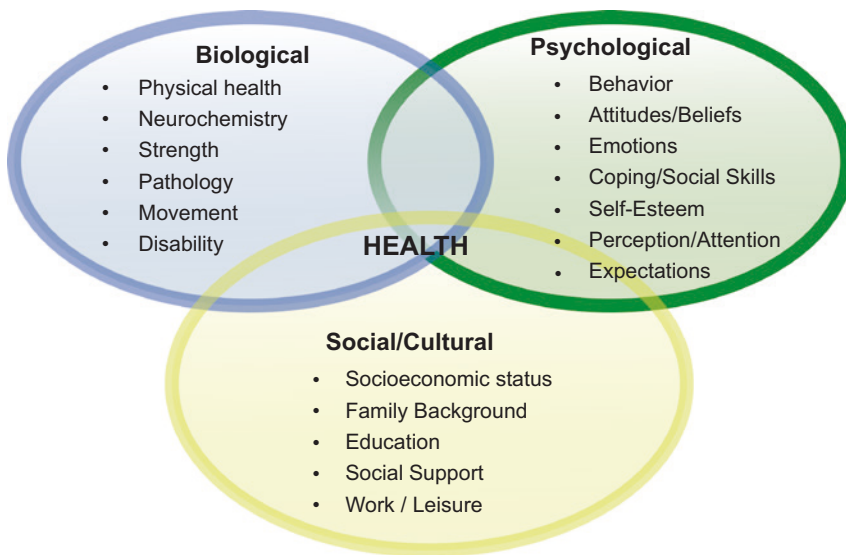
The categories are subdivided according to the chapter heading (item of the first level) down into the item of the fourth level (Table 5.2) (Rauch et al., 2012, p. 11).

The ICF model and category system aim to make it clear that the interactions between the individual factors and components can lead to imbalances, for example, after an accident, a cancer diagnosis, or a job loss. This can lead to a prolonged absence from work. As a result, professional contacts can be reduced, and the work rhythm that gives structure to everyday life can change or break down considerably, and eventually material losses can occur. Health is thus not only an attribute of a person but affects the entire social and environmental context of the person. The following Fig. 5.8 illustrates a version of the bio-psycho-socio-ecological concept of health following the WHO's definition of health (see above).



**Table 5.2** The Hierarchical Structure of the ICF (Source WHO, 2001, cf. Rauch et al., 2012, p. 11)

ICF				
Parts	Functioning and disability		Contextual factors	
Component	Body functions and structures	Activities and participation	Environmental factors	Person-related factors
Chapter First Level	b1–b8	s1–s8	e1–e5	internal influences, impact
Categories Second Level	b110–b899	s110–s899	e110–e999	
Categories Third Level	b1100–b7809	s1100–s8309	e1100–e5959	
Categories Fourth Level	b11420–b54509	s11000–s76009		

**Fig. 5.8** The Bio-psycho-socio-ecological Concept of Health

The basis for this model is to ease ‘return to work’ (RTW), such as re-entry into working life after a long period of unemployment or sickness absence. This multi-scientific knowledge of psychology, neurobiology, medicine and integrative therapy forms the basis for health coaching (Hartz & Petzold, 2014, p. 61). In doing so, the volitional competencies required to face this challenge are promoted, for example, by restrictions of physical functioning. Education and professional status seem to play a central role in the

perception of the job situation. Obviously, perceived job risks may increase the health risk of workers.

In order to find a suitable individual ‘return to work’ approach, the German-speaking Work Rehabilitation Questionnaire—WORQ (Finger et al., 2013) was developed for the first time in Germany. The aim of the questionnaire is to standardize information about the person, the professional situation, rehabilitation, and function. With this information, a multifunctional team (e.g. doctors, physiotherapists, osteopaths, psychologists, and nutritionists) should use this questionnaire individually as a communication and documentation basis for rehabilitation and RTW to enable development processes. The advantage of the multimodal concepts in rehabilitation is being guided by the statutory accident insurance controlling the treatment of the injured and referring to a professional accident clinic to protect individuals from disability (Bethge, 2011, p. 145). As part of the rehabilitation documentation, the ‘Integration of ICF documentation tools into the rehabilitation cycle’ was developed, which with the WORQ can form a documentation basis by means of the ICF (Glassel et al., 2012, p. 467). As part of the rehabilitation, the data on the questionnaires WORQ and Diagnostic Tool for Work Motivation (DIAMO) (Fiedler et al., 2008) have not yet been collected in Germany. The WORQ has been translated in Switzerland to Swiss-German, therefore only for the German-speaking region (Swiss Paraplegic Research/ICF Research Branch).

The adaptation of the WORQ was preceded by a literature search on rehabilitation test procedures used in Germany. The identification of tests measuring rehabilitation motivation and treatment expectation or work motivation is listed in Table 5.3.

The development of the WORQ was based on the ICF core set for vocational rehabilitation consisting of 90 categories, of which 13 are included in the Brief ICF Core Set (Finger et al., 2013). The WORQ has been cross-culturally adapted to several languages, and for German speaking persons, it has been adapted to German-Switzerland and German-Germany (see [www.myworq.org](http://www.myworq.org); Finger et al., 2013, 2015; Finger and Escorpizo 2016a, b; Veith-Tezeren et al., 2017b, c). The German-Germany adaptation was carried out as part of a research project to improve rehabilitation and RTW, guided by a quality management approach, i.e. SWOT analysis and the Continuous Improvement Cycle (see Figs. 5.9 and 5.10).

The WORQ enables self-assessed patient reports and clinician rated assessments. The results can be used to tailor the rehabilitation process also in relation to other relevant therapies. Combinations with other questionnaires within psychology, pain therapy, physiotherapy, and sociology are also possible. The strength lies in the ICF language and in the WORQ since it has been cross-culturally adapted to the legal and cultural framework in different languages. In Germany, with approximately 646.000 employed persons from different countries (*Statistisches Bundesamt*, 2017b), language barriers are common in the rehabilitation facilities.

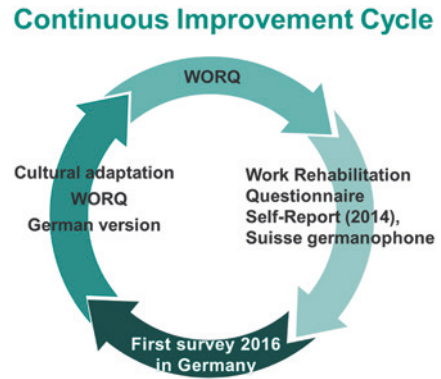
**Table 5.3** Questionnaires for Rehabilitation Motivation and Work Motivation

Name	Questionnaire	Rehabilitation, Cronbach's Alpha	Items and scales or dimensions
FBTM	Questionnaire for occupational therapy motivation	of the four scales is considered "satisfactorily high" (Zwerenz, 2008, S. 85).	24 items, 4 scales
FEZ	Questionnaire on expectations and goals of rehabilitation	"[...] between .70 and .83 at a satisfactory level" (Faller & Vogel, 2008, S. 89).	75 items, 19 scales
FMP	Questionnaire to measure psychotherapy motivation	"... satisfactory to very good rehabilitation parameters [...] of .91 for the total scale, for the subscales between .71 (II) and .86 (III)" (Schneider et al., 2008, S. 91, 92).	47 items, 4 scales
FPTM	Questionnaire for psychotherapy motivation	"... satisfactory to very good values [...] .68 (scale WI) and .92 (scale LD)" (Nübling & Scholz, 2008, p. 95)	39 items, 6 scales
FREM-17	Questionnaire to measure rehabilitation-related expectations and motivation	"Except for the 'Health scale', the scales are... satisfactory to good internal consistencies..." Cronbach's Alpha between .50 and .90 (Deck et al., 2008, , p. 99)	17 items, 4 dimensions
RAREMO	Questionnaire for recording rehabilitation motivation	"[...] was between .62 and .93 for the individual samples..." (Nübling et al., 2008, S. 103)	20 items, 6 scales
DIAMO	Diagnostic instrument for work motivation	"[...] good consistency values for the concepts MS and MH (Cronbach's Alpha .77 to .86... content-rationally derived concept MP is the value Cronbach's Alpha... from .59 to .81" (Fiedler et al., 2008, S. 366)	57 items, 10 scales

## 5.2 Method

The two clinics participating in this study were the Berufsgenossenschaftliche Unfallklinik (BGU), Frankfurt am Main, which is part of the hospital group of statutory accident insurance gGmbH and a private non-profit company, while the HKB-Klinik GmbH & Co., Klinik Rabenstein (KR) is a private clinic (Veith-Tezeren, 2017a). The cross-cultural adaptation of the WORQ German-Germany (GG; self-report long version and brief versions) was carried out with the participation of the authors of the original test following standard procedures of a cultural adaptation regarding questionnaires

**Fig. 5.9** Continuous Improvement Cycle



### Word Rehabilitation Questionnaire (WORQ)

- **Strengths**
  - Unified ICF-Code
  - Modular country-specific
    - Social security-, pension system
  - Early indicators of psychic problems
- **Weaknesses**
  - Item-scoring response overview
  - Response calculation matrix
- **Chances**
  - Shared global model
  - Optimisation or rehabilitation and participation
  - Guiding therapies and RTW
- **Risks**
  - Multiple versions (brief, self, interviewer, country-biased)
  - Operationalisation

**Fig. 5.10** Strengths and Weaknesses (SWOT Analysis) of WORQ

(e.g. experts, lay participants and patients). The questionnaires used in this study were thus the DIAMO (Fiedler et al., 2008) and WORQ GG. The standardized work motivation questionnaire DIAMO has closed questions and utilizes a so-called item wording effect, a methodological artefact used in empirical social research (Fiedler et al., 2008, p. 481).

### Sample

The aim of this study was to cross-culturally adapt the WORQ to German and to investigate the relationship between the WORQ and the DIAMO as well as their association with different rehabilitation measures. The BGU clinic only accepts rehabilitation patients from accident insurance companies or privately insured persons, while the CR is open to all insured persons if the diagnosis is approved for treatment. Power calculations for t-tests with an  $\alpha$ -error probability of 0.05 and a power of 0.8 and able to detect an average effect of  $d = 0.5$  resulted in a sample size of  $N = 128$ , or  $N = 64$  in each clinic. The power calculations for the correlations was based on an  $\alpha$ -error probability of 0.05

and a power of 0.8 capable of revealing a mean effect of  $|r| = 0.3$  resulting in a sample size of  $N = 82$ .

### **Adaptation WORQ–German-Germany**

The first pre-test of the WORQ GG in Germany at the KR revealed that the educational system and vocational training, as well as the social welfare system of Switzerland, differ from those in Germany. Language barriers also led to problems of understanding that could only be resolved in a one-to-one interview, which meant that the study had to be based on interviews. Cross-cultural adaptations of the WORQ German Swiss self-report and brief versions to WORQ GG started by recruiting three patients and three neutral persons after the first pre-test survey in the KR by expert groups. The exchange of information on the WORQ GG took place through personal meetings and discussions, through voting on the results via e-mails and via telephone conferences. Particular attention was paid to the differences in school and vocational qualifications between the USA, Switzerland, and Germany. The patient group, two women and one man, concluded at the ratio of two to one, that the WORQ German-Swiss was too long. In addition, the question sequence was criticised. The group of neutral persons, two women and two men, concluded at the ratio of three to one, that the WORQ GG was not too long. The expert group of six people, three women and three men, focused on the cross-cultural adaptation of Part 1 in the WORQ GG. Particularly on understanding the content of the questions and on the length, as the existing WORQ GG should be limited to not more than six pages. The order of the questions in the brief and SR versions of the WORQ GG was changed so that they were compatible with the order within the ICF coding system. In Part 2 of the WORQ GG questionnaire, only linguistic adjustments were made.

### **Statistical Analysis**

Data were analysed using LimeSurvey, G\*Power and R Version 3.3.3. Missing values resulting from unanswered questions were supplemented by a mean value imputation. An independent samples t-test was used to analyse group differences. The t-test assumes a normal distribution of the examined variables in both groups. This can be assumed for a sample size greater than  $N = 30$  in both groups (Gravetter & Wallnau, 2009, p. 204). Pearson correlation coefficient was used to analyse the association between two variables. Associations between the work motivation of the rehabilitation patients using DIAMO and ICF impairments using WORQ were explored.

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## **5.3 Results**

A total of 163 participants aged between 18 and 65 years took part in the study (mean age 47.9 years), consisting of 117 men and 45 women (one participant did not indicate gender). Table 5.4 shows the marital status of the participants.

**Table 5.4** Marital Status in %  
WORQ HD

Marital Status	%
Married	52
Single	26
Divorced	11
In cohabitation	4
Living separately	4
Widowed	3

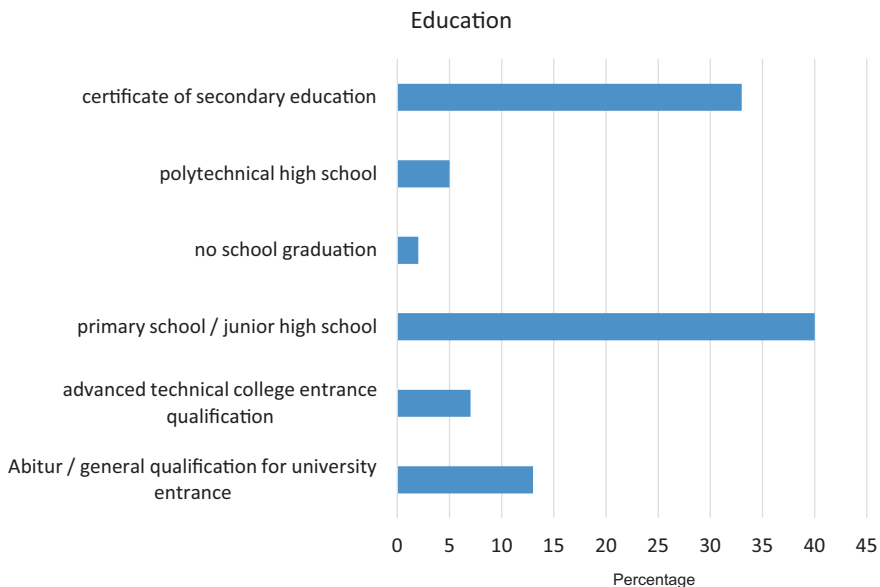
WORQ-HD is a short name for WORQ SR GG

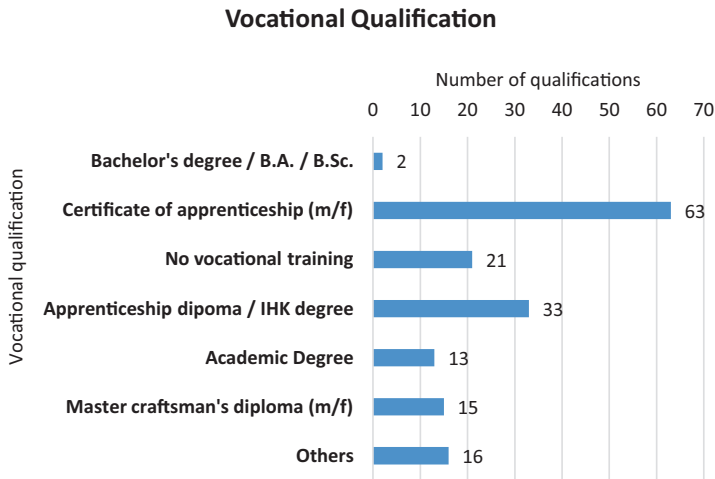
### Education

40% of the participants had a lower secondary school diploma (*Hauptschule*) forming the largest group, while 33% had a higher secondary school degree (*Realschule*), and 13% had *Abitur* or general university entrance qualification (*Hochschulreife*). The number of other school qualifications were less than 10%. Figure 5.11 shows the distribution of education among the participants.

### Vocational Qualifications

The vocational qualifications are illustrated in Fig. 5.12. Most notably is that 63 participants have completed a certificate of apprenticeship, while 28 participants have obtained an academic degree.

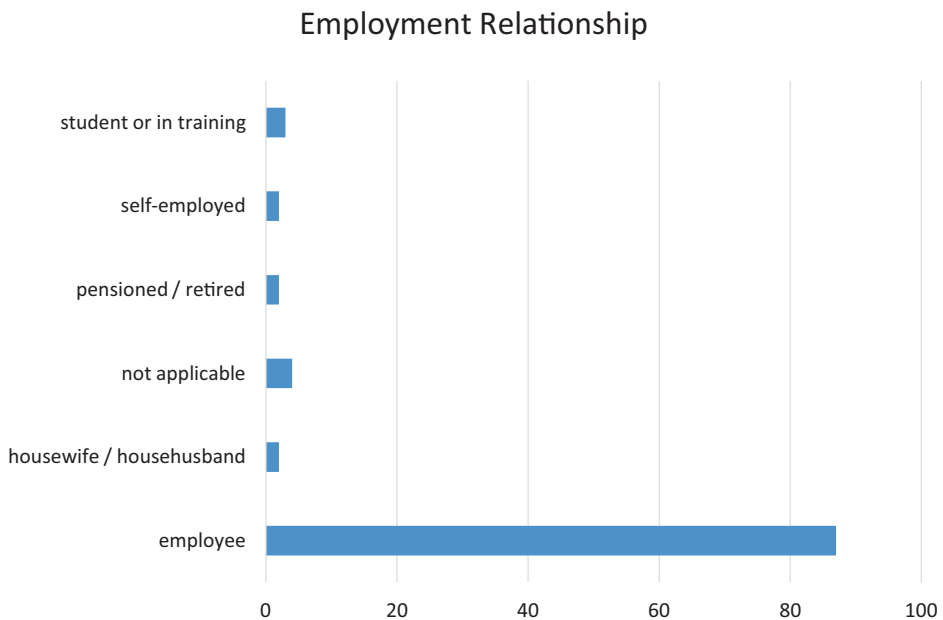
**Fig. 5.11** Distribution of Education



**Fig. 5.12** Vocational Qualifications of Respondents

### Occupational Relationships in the Main Activity

Most of the participants were employed (87%) as displayed in Fig. 5.13. The BGU exclusively provide treatment for persons undergoing rehabilitation in connection with their occupation, by accident, occupational disease, or an impending occupational disease.



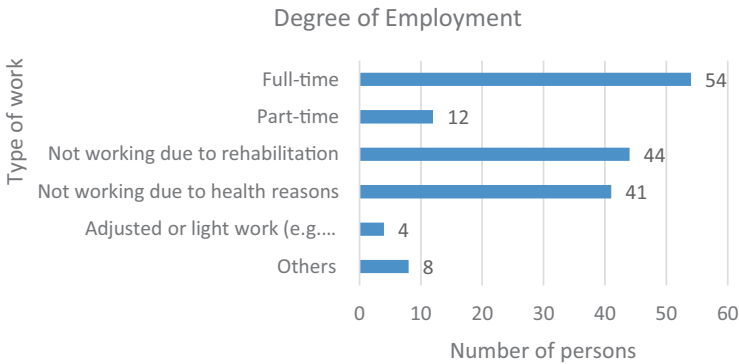
**Fig. 5.13** Employment Relationships in the Main Activity

### Degree of Employment

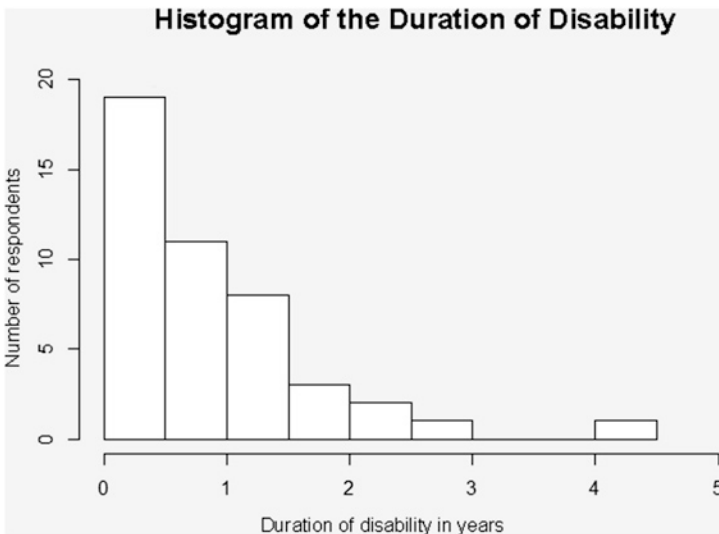
54 participants worked full-time, while many were not able to work due to being in rehabilitation or due to health reasons. The details can be seen in Fig. 5.14.

### Duration of Disability

The duration of occupational disability in years can be seen in Fig. 5.15. Most of the participants have had occupational issues for one and a half years.



**Fig. 5.14** Degree of Employment



**Fig. 5.15** Duration of Disability (WORQ SR GG)



**Reliability Analysis**

The WORQ GG showed a Cronbach’s Alpha value of 0.94 with a sample size of 163 participants and 36 items, representing high internal consistency. This is also acceptable compared to the Cronbach’s Alpha value of 0.88 in Finger et al. (2013, p. 507) having a sample size of 74.

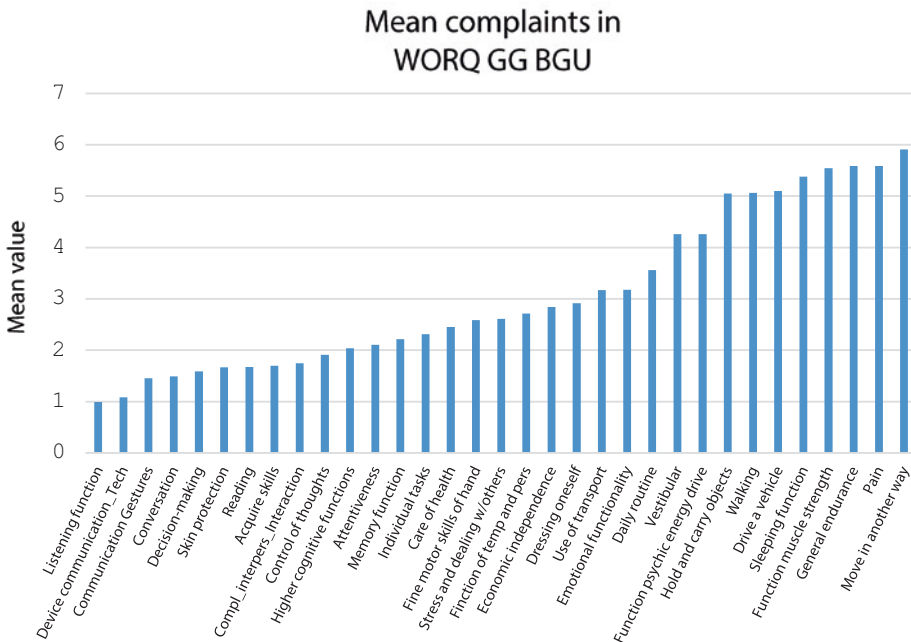
**Mean Complaint Level**

The mean level of complaints from part 2 of the WORQ is displayed for BGU (Fig. 5.16), KR (Fig. 5.17) and BGU and KR combined (Fig. 5.18) (BGU). The figures display the increase in complaint intensities from left to right. The combined scores show that pain is the most severe symptom complaint, followed by general stamina, sleeping function and moving in another way.

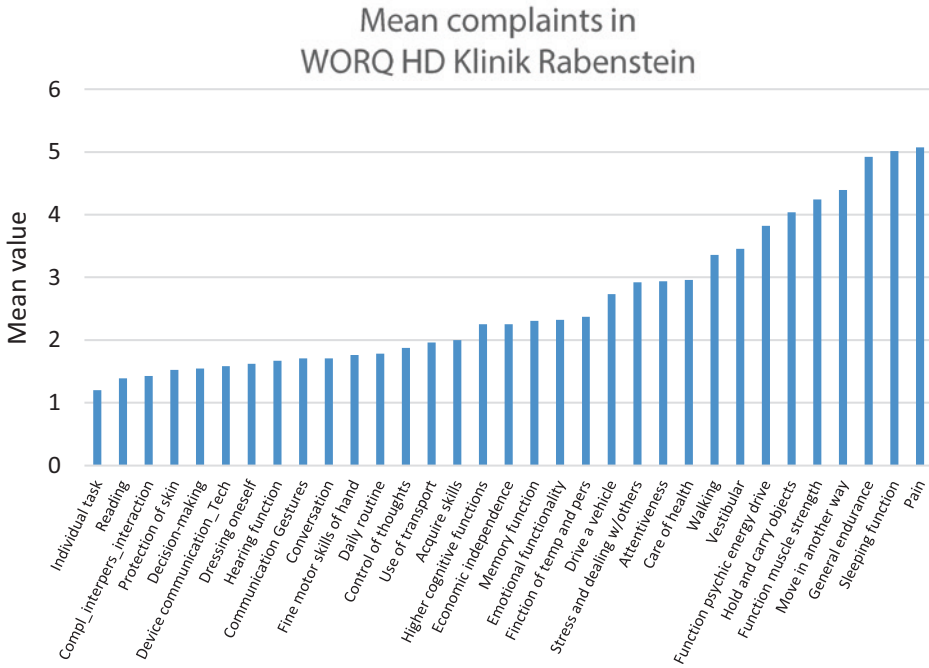
The participants in the BGU clinic scored above the mean value of 5 for eight categories of which moving in another way was highest, while the participants in KR clinic reported fewer complaints above the mean value of 5 (pain and sleeping function). Comparing the BGU and KR reveals the former scores higher in all selected categories (Table 5.5).

**Group Comparison by Gender of all Items According to WORQ SR GG**

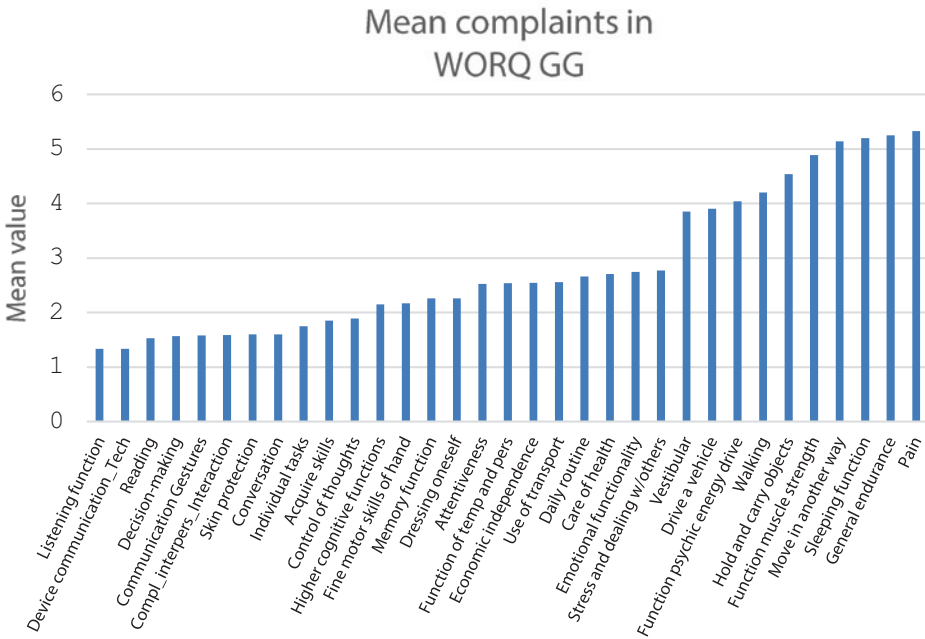
The comparison of men and women indicates that women seem to score higher than men (Table 5.6).



**Fig. 5.16** Mean Complaint Type, items in the BGU on the WORQ SR GG



**Fig. 5.17** Mean Complaint Type, items in the Klinik Rabenstein on the WORQ SR GG



**Fig. 5.18** Mean Complaints on the WORQ SR GG items

**Table 5.5** Mean Complaints Comparing the BGU and KR on the WORQ SR GG

Items	Mean BGU	Mean KR	t-Value	p-Value	Power
Muscle strength function	5.55	4.24	t(153.96)=2.765	p=0.006	0.78
Specific task	2.31	1.20	t(135.56)=2.608	p=0.010	0.74
Daily routine	3.56	1.78	t(134.28)=3.696	p<0.001	0.96
Using transportation	3.17	1.96	t(142.04)=2.206	p=0.029	0.59
Driving a vehicle	5.10	2.73	t(149.77)=3.509	p=0.001	0.94
Getting dressed	2.92	1.62	t(146.64)=2.887	p=0.005	0.82
Walking	5.06	3.36	t(151.16)=2.962	p=0.004	0.84
Moving about	5.91	4.39	t(152.979)=2.480	p=0.014	0.69

**Table 5.6** Comparing Scores for Men and Woman on the WORQ SR GG

Items	Mean (Men)	Mean (Women)	t-Value	p-Value	Power
Function of temperament and Personality	2.23	3.36	t(67.517)=-2.587	p=0.012	0.87
Function of psychic energy and drive	3.75	4.87	t(67.658)=-2.064	p=0.043	0.70
Sleep function	4.79	6.16	t(78.829)=-2.272	p=0.026	0.71
Memory function	1.94	3.11	t(63.261)=-2.083	p=0.041	0.74
Control of thoughts	1.58	2.70	t(62.493)=-2.161	p=0.034	0.78
Higher cognitive functions	1.83	3.00	t(69.261)=-2.375	p=0.020	0.80
Function of muscle strength	4.59	5.66	t(82.106)=-2.052	p=0.043	0.61
Decision-making	1.25	2.41	t(59.446)=-2.493	p=0.015	0.78
Daily routine	2.29	3.66	t(67.766)=-2.326	p=0.023	0.80
Dealing with stress and others	2.32	3.95	t(67.636)=-2.964	p=0.004	0.80
Use of transport	2.23	3.44	t(67.712)=-1.838	p=0.070	0.94
Getting dressed	1.88	3.27	t(64.524)=-2.508	p=0.014	0.87

### Correlation Analysis of 11 DIAMO Dimensions with 36 items (34 dimensions) WORQ SR GG

The results of the correlational analysis between the 11 DIAMO and the 34 WORQ GG dimensions are described below.

- The DIAMO target inhibition correlates with the WORQ GG item 'd240, handling stress and other psychological requirements' ( $r=0.33$ )
- The DIAMO target inhibition correlates with the WORQ GG item 'd3503, talking to a person' ( $r=0.31$ ).

- The DIAMO target inhibition correlates with the WORQ GG item 'd3150 communicating as a receiver of hand signs or gestures' ( $r=0.3$ ).
- The DIAMO dimension failure avoidance correlates with the WORQ GG item 'd3150, communicating as a recipient of gestures or gestures' ( $r=0.29$ ).
- The DIAMO dimension work incentive and desire for change (AV) correlates with the WORQ GG item 'd210, adopt a single task' ( $r=0.29$ ).
- DIAMO target inhibition correlates with the WORQ GG item 'b164, higher cognitive functions' ( $r=0.28$ ).
- The DIAMO dimension work incentive and desire for change (AV) correlates with the WORQ GG item 'd475, driving a vehicle' ( $r=0.27$ ).
- The DIAMO dimension work incentive and desire for change (AV) correlates with the WORQ GG item 'd540, dressing oneself' ( $r=0.27$ ).
- The DIAMO load factor (BL) in the workplace correlates with the WORQ GG item 'b164, Higher cognitive functions' ( $r=0.27$ ).
- The DIAMO target inhibition correlates with the WORQ GG item 'd160, focus attention' ( $r=0.27$ ).
- The DIAMO dimension settings for work correlates with the WORQ GG item 'd430, lifting and carrying objects' ( $r=0.27$ ).
- The DIAMO dimension settings for work correlates with the WORQ GG item 'd475, driving a vehicle' ( $r=0.26$ ).
- The DIAMO dimension settings for work correlates with the WORQ GG item 'd540, dressing' ( $r=0.26$ ).
- The DIAMO target inhibition correlates with the WORQ GG item 'b126, functions of temperament and personality' ( $r=0.26$ ).
- The DIAMO target inhibition correlates with the WORQ GG item 'd177, making decisions' ( $r=0.26$ ).
- The DIAMO load factor (BL) in the workplace correlates with the WORQ GG item 'd3503, talking to a person' ( $r=0.26$ ).

### **Correlations Between Age and DIAMO**

The correlational analysis between age and DIAMO reveals the following findings:

- The work attitudes (EA) correlate negatively with age ( $r=-0.29$ ).
- The target activity (ZA) correlates negatively with age ( $r=-0.34$ ).
- The work incentive and desire for change (AV) correlates negatively with age ( $r=-0.28$ ).

Finally, an exploratory correlation analysis was carried out between the Depression Core Set in the WORQ SR GG with DIAMO and a significant correlation between target inhibition and Psychiatric Core Set ( $r=0.303$ ).

### Comparing BGU and KR on DIAMO

The DIAMO factor 'attitude to work' ( $t(152,99)=2.80, p=0.006$ ) differs between participants at the BGU (mean=3.80) and KR (mean=3.44). The factor 'target activity' differs also between ( $t(152,31)=2.63, p=0.009$ ; BGU, mean=3.98; KR, mean=3.68) as well as 'work desire change request' ( $t(144.86)=2.026, p=0.04$ ; BGU, mean=3.07; KR, mean 2.85).

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## 5.4 Discussion

The results of the WORQ SR GG and the DIAMO show that both questionnaires can be used to target suitable rehabilitation measures. For data protection reasons, the collected data could only be evaluated at the group level. An individual analysis in electronic form, administered at regular intervals, could contribute to improving RTW for each participant through optimizing communication and documentation and gaining new insights. On the basis of the current results, there seem to be differences between the rehabilitation programs at the BGU and KR. Common to all programs is that insufficient sleep, which is often compensated by medication, has more impact on functioning compared to the other ICF categories.

The association between the target inhibition of the DIAMO and the item 'dealing with stress and other mental demands' of the WORQ SR GG, indicates that a stronger focus on coping strategies within the rehabilitation setting must be addressed, so that the patients' re-entry-into-the-work process can be facilitated. Any implementation of new interventions should carefully consider the mental models of patients representing the whole setting.

The gender and age-specific relationships between the complaints arising from the ICF questionnaires, the WORQ SR GG and the DIAMO work motivation questionnaire need to be further investigated. The focus could be on the contextual factors. The workplace-specific conditions in companies could be further investigated for factors that favour or inhibit RTW. The prolonged sickness absence of employees from the work process leads to many social and financial challenges in the age of accelerated adjustment (Arbeit 4.0). Thus, the likelihood that workplace processes, work requirements, and departmental structures have changed noticeably at the time of reentry into employment may have considerably increased during individuals' sick leave or rehabilitation process. Especially in the current phase of corporate restructuring, it is therefore important for rehabilitants to stay in contact with the workplace during the entire rehabilitation process and to be informed of and, if necessary, to be involved in first-hand changes in one's own workplace. This promotes the commitment to the company, which represents a gain for the company in the current situation of skill shortages. On the other hand, a high fluctuation of employees leads to rising costs, simply because of the long training periods required.

**Table 5.7** Proposed Measures for the Five Strongest Average Complaints

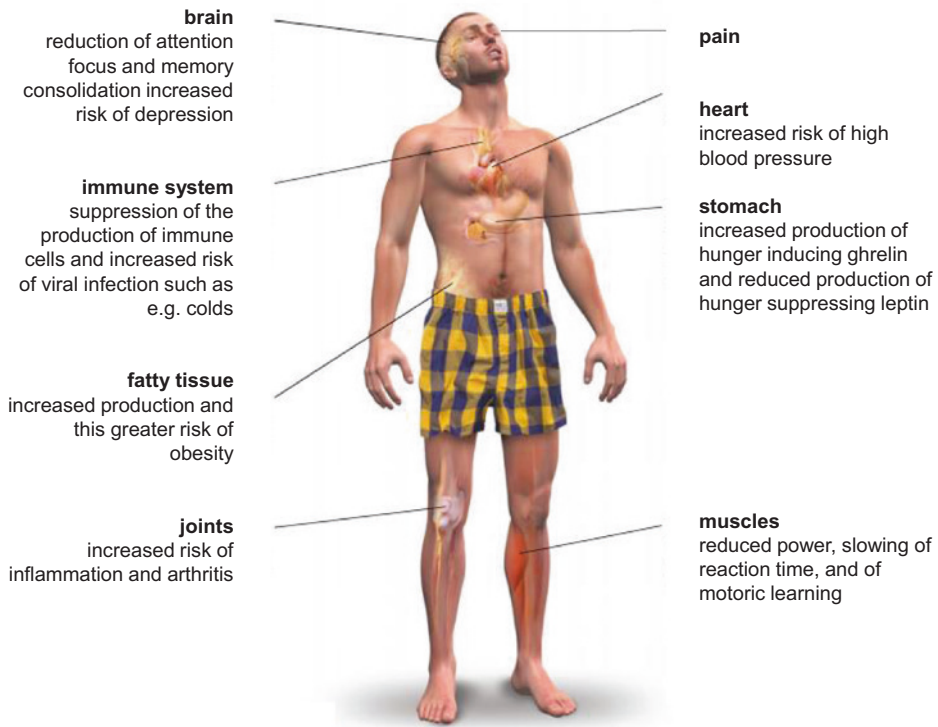
Mean order of expression	Ailment	Proposed measures
1.	Pain	Osteopathy, acupuncture, acupressure, medicines, tapping, Tai Chi, Kneipp treatments, yoga
2.	General endurance	Cognitive and physical endurance training (e.g., running, cycling), games, group exercises
3.	Sleep	Yoga, autogenic training, breath and relaxation exercises, fresh air, schedule, sleep laboratory, behavioral training, Tai Chi
4.	Function to move in a different way	Physiotherapy, occupational therapy, strength training, swimming, walking school, movement and coordination, osteopathy
5.	Function of muscle strength	Strength and endurance training

Taking into account the results of the present study, participants from BGU and KR might benefit from a number of obvious proposed measures with regard to the average severity of their worst complaints. These are suggested in Table 5.7 in descending order, with no claim to completeness.

Sleep is one of the most important prerequisites for mental and physical health. The need for restful sleep was indicated by participants at both clinics. In the current sample, lack of sleep seems to affect symptoms of pain, general stamina, function to move in a different way, and the function muscle strength, also negatively contributing to tensions in the family and at work. The effects of sleep disorders can negatively affect cognitive functions such as concentration, pain, sensation of pain, and spontaneous pain (Schuh-Hofer et al. 2016) as well as heart problems, weakening of the immune system, fat cells, stomach, joints and muscles (Schuh-Hofer et al., 2016). See Fig. 5.19 for a summary.

## 5.5 Conclusion

It was not examined whether the differences between the rehabilitation programs of the BGU and the KR lead to different RTW results. This might be explored in a long-term WORQ study. In addition, the introduction of the ZAZO (Zielanalyse and Zieloperationalisierung, standing for target analysis and operationalisation) training concept in the clinics could address the specific needs of each group in a customer-oriented manner. In doing so, information influencing RTW could be analysed more precisely. A number of further research questions are connected with the investigations carried out in the present work, e.g.:



**Fig. 5.19** Possible Effects of Sleep Deprivation. (Source Adapted from Myers, 2014 p. 108)

- Effects on job satisfaction among male and female rehabilitees after RTW
- Tailoring occupational rehabilitation for part-time employees over the age of 65 with regard to RTW
- Impact of school education or vocational training on RTW? Age-specific industry differences in RTW

In a long-term study, the integration of the WORQ SR GG into the rehabilitation process would most likely lead to further evidence-based improvements of the whole rehabilitation process. The latter could support the planned amendments to the SGB IX on 01.01.2023.

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