



## **Development of Vocational Rehabilitation Support Tool Corresponding to Diversification of Disabilities (Part 2) - Development of New Work Samples for Makuhari Work Sample (MWS) -**

### **(Research Report No.145) Summary**

#### **[Keywords]**

Makuhari Work Sample (MWS), mood disorder, developmental disability, adaptation disorder, higher brain dysfunction, reinstatement support, self-understanding, dealing with stress and fatigue

#### **[Points for Practical Purpose]**

In this research, regarding the "Makuhari Work Sample", responding to requests to develop work samples that are more difficult and more practical, three new work samples of "Salary Calculation", "Proof-reading" and "Mail Sorting" were developed.

Cases used for persons with disabilities (mood disorder, adaptation disorder, developmental disability, or higher brain dysfunction) aiming at reinstatement and reemployment are introduced, and describes the functions of MWS that have been strengthened and added by the new work samples, how to effectively use them according to the disability characteristics, and notes upon implementation. In addition, reference values for new work samples are also posted.

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## **2. Research Period**

FY2016 to 2018

## **3. Composition of the Research Report**

Introduction: Background, Purpose, and Method of this Research

Chapter 1: Development of New Work Samples of MWS

Chapter 2: Implementation and Results of New Work Samples for Adults

Chapter 3: Implementation and Results of New Work Samples for Persons with Disabilities

Chapter 4: For Effective Use of New Work Samples

(Functions of new work samples, points on utilization and matters to be noted)

Chapter 5: Future Challenges

Reference: Reference Values for New Work Samples

## **4. Background and Purpose of Research**

In the National Institute of Vocational Rehabilitation research group (research group on support for persons with disabilities), a "total package for promoting workplace adaptation" (hereinafter referred to as "Total Package") as an evaluation and support technique for persons with higher brain dysfunction and schizophrenia in the five years from FY 1999 has been developed, and after the development, research is being conducted to increase the versatility of the Total Package in the field of support.

The Makuhari Work Sample (hereinafter referred to as "MWS") is one of the tools that make up this Total Package, and has been put on the market since FY 2007, mainly for vocational rehabilitation institutions, and it is used by various institutions including labor, education, welfare, and medical care. As more than a decade has passed since development, a basic survey was conducted in FY 2012 to clarify the actual conditions of MWS utilization and needs for revision, and confirmed the need for revision of each work sample that constitutes MWS

(hereinafter referred to as "existing work samples") and the development of new types of work samples (hereinafter referred to as "new work samples"). Therefore, in special study 17 (from FY 2013 to 2015), the revision of the existing work samples, the selection of the work items for new work samples, and the creation of a prototype were performed.

This research is the next research of Special Research 17, where the purpose will be the following three points of (1) to develop new work samples that are more difficult than existing ones and are in line with the current employment environment, so we can provide effective support to people who have been diagnosed with developmental disorders after adulthood, and those who want to return to work after leaving for work due to mental disorders (such as mood disorders), (2) to identify the capabilities of MWS that have been enhanced and added through the development of new work samples, and (3) to create reference values for the new work samples. In addition to these purposes, we examined how to effectively use according to the characteristics of the disability and the points to be noted upon implementation.

## **5. Research Method**

### **(1) Establishment of a Specialized Working Group**

As a specialized working group, we set up a specialized working group consisting of instructors of the National Kibi-Kogen Vocational Rehabilitation Center, counselors of the local vocational centers for persons with disabilities, and supporters of an external organization using MWS as members of the committee. In this study, they operated for the purpose of (1) pre-trial runs for staff members of research collaborators, and (2) implementation of new work samples for persons with disabilities at the research cooperation institutions, and examination of utilization effects based on those results.

### **(2) Pre-Trial Runs Conducted by Adults**

In FY 2016, in order to collect data for setting the reference values, pre-trial runs of three new work samples (see 6 (1) below) were conducted by staff members of the agency and research cooperation institutions, and reviewed implementation procedures and scoring procedures.

### **(3) Data Collection for Disabled People**

From FY 2016 to 2018, with the purpose of identifying the effects of using new work samples, how to effectively use them according to the characteristics of disabilities, and making notes regarding implementation, data was collected from persons with disabilities at the research cooperation institutions.

#### (4) Collection of Adult Data for Setting Reference values

From FY 2016 to 2018, with the purpose of identifying the effects of using new work samples, how to effectively use them according to the characteristics of disabilities, and making notes regarding implementation, data was collected from persons with disabilities at the research cooperation institutions. For FY 2017, like the existing work samples, we secured workers who met certain requirements from a temporary staffing agency as data providers. For FY 2018, in order to balance the ratio of data providers, we made requests to a subject referral service and secured data providers of men in their 20s to 50s and women in their 20s.

## 6. Summarized Results of the Study

### (1) Development of New Work Samples for MWS

In developing new work samples, we selected work based on the policy in table 1, and developed "Salary Calculation" as OA work, "Proof-reading" as office work, and "Mail Sorting" as practical work. Table 2 shows the structure of the new work samples and the contents of each work sample.

As one of the features of the new work samples, it is assumed that there are tasks that are performed while referring to and confirming the materials such as charts and guides, and reference to the sub-book (showing the charts and implementation procedures required for the tasks) is assumed. By using the sub-book, it is also aimed to grasp "the ability to understand the rules described in the document" and "the ability to properly operate the understood rules".

Table 1: Concept of Selecting Work Samples

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- (1) Work that may exist in the current labor market
  - (2) Develop one type each for the three work areas (OA work, office work, and practical work) that constitute the MWS
  - (3) Being able to make in line with the concept of MWS
  - (4) Set the level of difficulty higher than existing work samples so that it can provide effective support to people who want to return to work after leaving due to being diagnosed with developmental disability after adulthood or a mental disorder (such as mood disorder)
  - (5) To consider the applicability to persons with higher brain dysfunction, schizophrenia and intellectual disability who were supposed to be the main targets when developing existing tasks
  - (6) It is possible to provide a reference value
  - (7) The aspect of the cost (manufacturing cost, labor when using it in support situations, etc.) is not large
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Table 2: Structure of New Work Samples and Contents of Each Work Sample

Area	Name	Content
OA Work	Salary Calculation	<p>&lt;Content&gt; Based on the data for one employee displayed on the screen, the value of each item required for salary calculation is calculated, and the numerical value is input in the designated cell. Work is done while referencing to the sub-book that describes the calculation method and the attached materials (insurance table, withholding tax table).</p> <p>&lt;Structure&gt; 1 Trial: Salary Calculation for 1 Employee, 1 Block: 6 Trials, Level: 4 Stages</p>
Office Work	Proof-reading	<p>&lt;Content&gt; Perform proof-reading work using printed documents such as office documents and reports. Correct the errors using proof-reading symbols in accordance with the sub-book and report preparation rules by aligning the manuscript and proof letters.</p> <p>&lt;Structure&gt; 1 Trial: One Correction Required, 1 Block: 2 Trials to 16 Trials, Level: 7 Stages</p>
Practical Work	Mail Sorting	<p>&lt;Content&gt; Sort postal items such as postcards and sealed letters that have been mailed to a virtual company into appropriate boxes and folders according to the rules for sorting, referring to the organization chart, employee list, and the alphabetical index.</p> <p>&lt;Structure&gt; 1 Trial: 1 Mail, 1 Block: 20 Trials, Level: 5 Stages</p>

## (2) Implementation and results of new work samples for adults

The three new work samples were conducted by adults to create reference values and to grasp characteristics of the work samples. The period was from July 2017 to October 2018, and the number of research cooperators was 163 people (65 males, 98 females). The results are shown in table 3.

## (3) Data Collection and Results for Persons with Disability

Focusing on cases where new work samples were mainly used as evaluation and cases such as where training was used to improve work performance, sorted by disorder (mood disorder, adaptation disorder, developmental disability, and higher brain dysfunction), the implementation progress for each case was organized, and points of importance for support and points to be considered upon use were examined. In addition, for the task of "Mail Sorting" which was developed in consideration of the application to the conventional clients at the research cooperation institutes, one example was described for each case in which the case was implemented for schizophrenics and persons with intellectual disabilities.

Table 3 Implementation Results of New Tasks for Adults

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**A. Relationship between the number of correct answers for each work sample and various variables (\*)**

- The number of correct answers for "Salary Calculation" and the relation to other variables is considered to have very little correlation
- The number of correct answers for "Proof-reading" and "Mail Sorting" has a correlation with some variables, but is not strong
- With regard to "Salary Calculation", a moderate positive correlation was recognized between age and working time in the simplified version and training version

**B. Error occurrence status of each work sample**

- Each error occurrence status shows orderly dependence on the level configuration of each work sample.

**C. Degree of fatigue and signs of fatigue for each work sample**

- Degree of fatigue
- In the simplified version, "Mail Sorting" is significantly lower than "Salary Calculation" and "Proof-reading"
- In the training version, "Mail Sorting" is significantly lower than "Proof-reading"
- Signs of fatigue
- There are many occurrences of "eye fatigue" for both the simplified and training versions of the work samples
- In the training version, the number of occurrences of fatigue signs increases compared to the simplified version
- With regard to some fatigue signs, "Mail Sorting" is significantly less than "Salary calculation" and "Proof-reading"
- Only for "whole body fatigue", for the training version, "Salary Calculation" is significantly more than "Proof-reading"

**D. The execution order of the simplified version of each work sample**

- There is no significant difference in the number of correct answers depending on the order of implementation
  - There may be an influence on working time spent depending on the order of implementation
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\*The variables used were gender, age, and working time

(4) For effective utilization of new work samples

Based on the results of implementation for persons with disabilities and adults, we examined the functions of MWS that were strengthened and added by the utilization of new work samples, how to effectively use according to the characteristics of the disability, and the points to be noted upon implementation.

A. The function of new work samples

(A) The function of new work samples (simplified version)

The simplified version of the existing work samples has a function for experience and a function for evaluation.

Regarding the simplified version of the new work samples, it became possible to grasp error tendency and signs of stress/fatigue that were not grasped in the existing work samples, characteristics that make a professional strength, and effectiveness of the complementation method acquired by utilizing existing work samples, allowing for the evaluation function to be strengthened. In addition, it was suggested that by experiencing the level of difficulty of each work sample through the simplified version, and by clarifying one's own goals through the feedback of the results, the target person (and supporters) will be able to select appropriate

work samples upon using the training version for their training.

(B) The function of new work samples (training version)

In the training version of the existing work samples, there are the functions of (1) evaluation and support for the improvement of work skills and utilization of complementary methods, (2) evaluation and support for establishing self-management skills related to work, and (3) evaluation and support for establishing self-management skills related to stress and fatigue. With regard to new work samples, in addition to strengthening those functions, the functions of (4) maintaining motivation for training, and (5) awareness of one's own characteristics and clarification of items to be coordinated with the employer were added.

As for (1), it became clear that the actions of "reading carefully the sub-book" and "confirming the work done by oneself in a proper way" become formed.

Regarding (2), there were opportunities to find useful clues for oneself, such as creating a procedure based on the sub-book, and an increase in opportunities to introduce procedures such as self-teaching, self-recording, self-monitoring, self-assessment, etc. in order to increase the accuracy of task execution.

With regard to (3), it was possible to reproduce the situation where fatigue and stress occur in the workplace in a near-real environment, monitor how fatigue and stress appear in a near-practical setting, and make opportunities to consider how to deal with fatigue and stress such as by the way of taking breaks and pacing of the work.

Regarding (4), mostly among the clients to support reinstatement, there were comments that lead to motivation such as "I achieved confidence in the work", "I have a sense of accomplishment", and "this connected to confidence".

As for (5), it was suggested that the utilization of the new work samples brought about the subject's awareness of cognitive/behavior characteristics that may become impairment depending on the interaction with the environment. In addition, for cases in which the awareness obtained through utilization of new work samples was reflected in the report and navigation book of the reinstatement support program created by the subject, the use of new work samples became an experience to deepen awareness of the cognitive and behavioral characteristics, and it was suggested that upon consulting with a support person, it will lead to preparedness of the way of working upon reinstatement, and clarification of matters to be adjusted with the employer.

B. Points of utilization and notes

In this section, as points and notes to be considered in using new work samples effectively, (A) target people who are expected to use each work sample, (B) timing for utilizing the new work samples, (C) maintaining motivation, (D) response to over-concentrated subjects, (E)

feedback of results, (F) combined use of the Total Package with other tools, (G) application of single case study method, (H) organizing mail items in "Mail Sorting", and (I) handling of reference values were considered.

(A) Expected target persons

(1) Common to 3 new work samples

From the results of collected data for the persons with disability, it was considered that the target person's requirement was that attention could be maintained for a certain period of time (at least 30 minutes or more) while paying attention to multiple locations.

(2) Salary Calculation

It was required for the target person to be able to understand (or eventually be able to understand) the contents of the sub-book and various tables (such as insurance table and withholding tax table). For persons with higher brain dysfunction, although difficulties have been found in understanding the sub-book, in cases where they had similar work experience in the past, it became possible for them to train for learning complementary methods by using the training version.

(3) Proof-reading

The target person is required to be able to understand the contents of the sub-book and the report writing regulations. Level 1 to level 5 of the training version are only proofreading of characters, so as long as they are able to "read the letters of scripts and proofs", refer to the sub-book, and to "correctly understand the proofreading procedure", the work can be conducted.

(4) Mail Sorting

The target person must be able to decipher to whom the mail is addressed, and understand the sorting rules, organization chart, employee list, and the alphabetical index in the sub-book. Regardless of disability or work experience, it has been confirmed that this can be applied to a wide range of subjects such as persons with mood disorders, developmental disorders, schizophrenia, higher brain dysfunction, and intellectual disabilities.

(B) Timing for utilizing the new work samples

For cases where the correct answer rate was low in the simplified version of the new work samples despite the person being able to conduct stable task execution with existing work samples, and cases where it took a considerable amount of time to improve the accuracy, it was considered more effective to utilize existing work samples that consisted of basic elements common to various tasks, and to use new work samples after performing assessment and training. In particular, it is considered the load on the target person is lower upon performing new work samples when they are determined they are able to conduct stable work execution with work samples having a high degree of difficulty among existing work samples.



### (C) Maintaining motivation

From the implementation results for the persons with disability, as for new work samples, although the function of maintaining motivation using the training version has been established, there is a limit to maintaining the motivation for training only by increasing the difficulty level of the work sample. Therefore, regardless of the existing work samples or new work samples, it is important to share the aim of the Total Package and the MWS implementation procedure between the person and the supporter.

### (D) Response to over-concentrated subjects

Among the new work samples, it was reported that "Salary Calculation" has a tendency for the target people (especially people with developmental disabilities) to become over-concentrated. If the behavior that leads to over-concentration is noted, it can also be made an opportunity to check similarities with the approach to work and to consider the characteristics of the target's own way of working from the viewpoint of schedule management and dealing with stress and fatigue.

### (E) Feedback of results

It was confirmed through implementation to persons with disability and adults that, depending on the target, a strong stress reaction is evoked if the result is not assumed by the person. On the other hand, even if the percentage of correct answers in the simplified version was low, there were cases reported in which they accepted the results and made it a motivation to step up to the training version. From these cases, it was considered important to share in advance the purpose of utilizing new work samples, and after implementing new work samples, connecting it to group work and consultation, and provide an opportunity for the target person to reflect on what they experienced through the new work samples.

### (F) The combined use of other tools of the Total Package

Even in new work samples, there were cases reported in which organizing the implementation results and the complementing method in the M-memory note led to the determination of effective coping methods, and cases where the implementation of the Wisconsin Card Sorting Test (WCST) led to the identification of potential support needs.

### (G) Application of single case study method

With the purpose of clarifying effective teaching and support methods for individual subjects, MWS recommends to review the intervention method based on data such as correct answer rate of work result and work time, evaluate the effect by the data, and carry out the procedure (single case study method) that leads to the improvement of the intervention method. In the past research of the Total Package, opinions were given such as "it is labor and time consuming" and "it is difficult to learn the implementation method" about the implementation procedure to which this single case study method was applied. However, the examples of

utilization of the new work samples showed the advantage that the target person and the supporter could jointly study the data, and that the process of learning could be presented to the employer based on the data. As a strategy to reduce labor and time costs, in the case where the target person has high ability to perform work, such as a target to support reinstatement, it is also conceivable to propose a method in which after sharing the purpose of the Total Package, the target person monitors oneself and advances the result according to the implementation procedure of MWS applying the single case study method.

(H) Organizing mail items in "Mail Sorting" (responding to the development of work that can be done by groups)

It has been pointed out that it takes longer to organize mail after the training version has been implemented for "Mail Sorting". In this regard, we may use "Mail Sorting" to instruct users who can perform stable work and users who do not plan to use the work sample as a role in organizing mail. Alternatively, it may be possible to use it as an opportunity for users to mutually request and coordinate. By such devising of utilization, it is thought that it is possible to partially respond to the requests for the development of work requiring communication and work done as a group identified in the basic survey of FY 2012.

(I) Handling of reference values

The percentile ranking table created in this study is calculated from the results of data collected from people such as temporary workers, and is not a representative value for adults, nor is it a data from a target population based on specific job experiences. Therefore, when using the percentile ranking table to provide feedback to the clients, it is necessary to keep in mind that it does not indicate a standard to be used as a guideline for reinstatement or finding employment for tasks similar to the new work samples, but rather is a reference value.

## **7. Future Challenges**

From the results of the implementation to persons with disabilities and adults, it was confirmed that the development of new work samples has enhanced and strengthened the function of MWS. From now on, in various vocational rehabilitation institutions including the wide area and local vocational centers for persons with disabilities, it is important that MWS including new work samples be used as one of the tools to construct the Total Package, and that data showing the effectiveness of adaptation to the workplace after employment or reinstatement be accumulated.

Also, regarding new work samples, due to it being developed as a highly challenging work sample, it has also been pointed out as a psychological hurdle for supporters to understand the implementation procedure. Therefore, the examination of effective training methods is mentioned as a challenge.