

## Effect of Modified Therapeutic Work Program (MTWP) on Work status in Chronic Rheumatoid Arthritis (RA)

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### ABSTRACT

**OBJECTIVE:** 1. To study whether MTWP addressed to enhance the work skills in RA., 2. To evaluate if the program is successful for the client return to work, level of work satisfaction & self-performance level., **METHODS:** **Design-** Single group pre test post test experimental design followed by descriptive analysis with questionnaire., A different subject prospective, experimental, flexible design has been used for the purpose of this study. MTWP has 6 phases with treatment plan based on client capabilities, deficits, interest, work history and goals., **Setting-** Out-patient and in-patient based clinical services at NIOH., **Outcome Measure-** 1 Minnesota Manual Dexterity Test, 2, Hand Dynamometer, 3, Pinch gauge, 4, Short Form-36(version 1) – subjective outcome assessment for functional/ work status., **RESULTS:** The result which was analyzed by using paired t-test, found to be significant ( $p < 0.05$ ) improve in work skill post MTWP., **CONCLUSION:** The MTWP addresses the range of needs demonstrated by RA clients, from traditional therapy to prevocational and vocational intervention. The evaluation of the program indicates that the program was successful with RA working age adult. 72% clients who completed the program returned to work and switched over to different position and different type of work. 44% clients return to competitive employment with same work type, work situation, having work satisfaction and 80-100% work skills in compare to pre-MTWP work situation.

**Keywords** –Therapeutic Work Program, Work status, Rheumatoid Arthritis.

### INTRODUCTION

Rheumatoid arthritis (RA) is a chronic, systemic inflammatory disorder that may affect many tissues and organs, but principally attacks the joints producing an inflammatory synovitis that often progresses to destruction of the articular cartilage and ankylosis of the joints.

About 1% of the world's population is afflicted by rheumatoid arthritis, women three times more often than men. Onset is most frequent between the ages of 40 and 50, but no age is immune. It can be a disabling and painful condition, which

can lead to substantial loss of functioning and mobility (2).

The arthritis of joints known as synovitis, is inflammation of the synovial membrane that lines joints and tendon sheaths. Joints become swollen, tender and warm, and stiffness limits their movement. Most commonly, small joints of the hands, feet and cervical spine are affected, but larger joints like the shoulder and knee can also be involved, differing per individual. Synovitis can lead to tethering of tissue with loss of movement and erosion of the joint surface, causing deformity and loss of function (1).

The non-pharmacological treatment for RA includes physical therapy, orthosis and occupational therapy. Regular exercise is important for maintaining joint mobility and making the joint muscles stronger. The occupational therapist provides hand splint and assistive & adaptive devices to improve hand function (3).

Daily living activities are impaired in most individuals having rheumatoid arthritis. After 5

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years of disease, approximately 33% of sufferers will not be working. After 10 years; approximately half will have substantial functional disability (2).

Several references can be located in the literature mentioning about the work hardening program essentially aimed at improving the productivity, safety, and physical tolerance of the worker having disability (4, 8). Through work hardening program, Occupational Therapy can provide the vital link between the workers functional capacity and specific demands of a job. This link is in the form of a realistic simulation of job tasks and/or by simulation of physical demands of the job, which allow occupational therapist to determine if the worker; can return to the same job, can return to the same job with modification or requires retraining for a different job (6, 7).

Lyons & Morse (1988) developed a Therapeutic Work Program (TWP) to address client's prevocational & vocational needs, with prevocational and vocational intervention to facilitate return to work. As reported by Lyons and Morse, the TWP was originally developed in 1982 at the New England Rehabilitation Hospital by Patricia Harris Minnasian. The program was further developed and refined by Janet Kenig, Maureen Flaherty, and Sharon Engelhardt (5).

The current study is primarily based on the concept of TWP. However it is intended for use on the rheumatoid arthritis clients in combination with traditional therapies.

Traditionally the client having arthritis go through the rehabilitation program without emphasis on the client's ability to return to work. The original Therapeutic Work Program (TWP) has 8 phases, where as in Modified Therapeutic Work Program (MTWP) has 6 phases and it does not include two phases namely; 1.vocational placement 2. Follow-up.

### **AIMS & OBJECTIVE**

To find out effect of the MTWP on work status by addressing subjects prevocational and vocational needs among Rheumatoid arthritis working age adult.

### **Hypothesis**

MTWP has a positive influence on return to work abilities for individuals having Rheumatoid arthritis.

### **Null Hypothesis**

There is no influence of MTWP on work status for individual with Rheumatoid arthritis.

## **METHODOLOGY**

**DESIGN** Single group pre test post test experimental design followed by descriptive analysis by questionnaire.

A different subject prospective, experimental, flexible design has been used for the purpose of this study. MTWP has 6 phases with treatment plan based on client capabilities, deficits, interest, work history and goals.

**SUBJECTS** A total number of 30 subjects affected by RA for more than 5 years having difficulties in performing work were selected for the study. Mean age was 42 years (range 30 to 56 years) having both male and female. Period of study from January 08 to September 08. Clients were explained the purpose of the study and were requested to participate in the study. Written consent obtained from each participant before study begins.

### **Inclusion Criteria**

1. Subject diagnosed as RA by physician.
2. Subject had complained of change in job type or loss of job or difficulties in performing job.
3. Supervised functional mobility in the wheel chair or self ambulatory level.
4. Manageable social behavior.
5. Attention span of 30 minutes in an institutional environment with minimal distraction.
6. Ability to establish goals with guidance.
7. Stanford Arthritis Self-efficacy Function Scale above 5.

### Exclusion Criteria

1. Dependent on others in mobility
2. Problematic behavior & Interpersonal skills

### Outcome measure used for work skill assessment

1. Minnesota Manual Dexterity Test, 2. Hand Dynamometer, 3. Pinch gauge, 4. Short Form-36(version 1) – subjective outcome assessment for functional/ work status.

**MMDT:** Minnesota Manual Dexterity Test is a standardized test that measures eye hand coordination and manual dexterity of the arm and

#### Placing Test (PT)



professional societies, the Jamar dynamometer has been shown to be a reliable test instrument, provided calibration is maintained and standard positioning of test subject is followed. This dynamometer has five adjustable spacing at 1, 1.5, 2, 2.5 and 3 inches. The client is shown how to grasp the dynamometer and is requested to grasp it with his or her maximal force. The grip test position should be standardized. The forearm should be in neutral rotation and the elbow flexed 90 degree. The shoulder should be adducted. The wrist should be between 0 and 30 degree of extension and 0 and 15 degree of ulnar deviation. The grip can measure at each of the five-handle spacing.

The right and left hands are tested alternately and the force of each is recorded. The test is placed at a rate to eliminate fatigue. There are 30 brands new dynamometer available in the market and 80% met the correlation criterion of + 0.9994. In

hand for manipulative work. It requires unilateral and bilateral movements while utilizing a broad range of shoulder motion. The Minnesota Manual Dexterity Test incorporates two test batteries namely-Placing Test (PT), Turning Test (TT).The tests include 60 two-colored wooden cylinders, plastic board, record forms, norms and manual with test battery instructions.

#### Hand Dynamometer & Pinch meter

The Hydraulic Jamar grip dynamometer with five adjustable handle spacing provides an accurate evaluation of the force of grip. Developed by Bechtol C. (1954) and recommended by

#### Turning Test (TT)



1978 and 1983, the ASSH recommended that the second handle position be used and average of 3-trials be recorded.

There are three basic type of pinch: (1) Chuck or three finger pinch (Pulp of the thumb to pulp of the index and middle finger) (2) Lateral or key pinch (Prehension of thumb pulp to the lateral aspect of the index middle phalanx) (3) Tip pinch (thumb tip to the tip of the index finger). These 3 types of pinch are usually assessed and can be tested with a pinch meter. As with grip measurement, the mean of 3 trials is recorded and comparisons are made with the opposite hand. Reliability of pinch meter needs investigation. Hydraulic pinch instruments are more accurate than spring loaded.

#### Sf-36(version 1)

SF-36 (John E. Ware, Jr., 1992) is a multi-purpose, short-form health survey with only 36

### Pinch meter



### Hand dynamometer



questions. It yields an 8-scale profile of functional health and well-being scores. The four scales Physical Functioning (PF), Role Physical (RP), Role Emotional (RE) & Social Functioning (SF) correlate most highly with the functional/work status. It is a generic measure, as opposed to one that targets a specific age, disease, or treatment group. Accordingly, the SF-36 has proven useful in surveys of general and specific populations, comparing the relative burden of diseases, and in differentiating the health benefits produced by a wide range of different treatments.

More recently, the SF-36 was judged to be the most widely evaluated generic patient assessed health outcome measure in a bibliographic study of the growth of "quality of life" measures published in the British Medical Journal (Garratt, Schmidt, Mackintosh, & Fitzpatrick, 2002).

#### Program description

The program is designed to help an individual to make a gradual, progressive transition from a medical setting to work placement and community reentry. MTWP has 6 phases. The client functional status and progress were monitored on an ongoing basis, and transition to new phases was determined by the Occupational Therapist and based on the client needs. Not all clients went through each phase or follow the sequence. Client continues with individual

occupational therapy throughout their involvement in the MTWP.

#### MTWP Six Phases

**Phase 1-** *Individual assessment and treatment in OT department.*

Individualized assessment by occupational therapist were obtained from Initial general OT assessment format, which includes-

1. Date of onset, participation in MTWP
2. About previous job specification / demand which based on information from Canadian Classification and Dictionary of Occupations.
3. Obtaining background information pertinent to work.
4. FIM for ADL.
5. OT intervention includes joint protection, splinting and remedial activity etc.

#### Phase 2- Group treatment

1. In this phase as client progress to higher level of functioning they participate in group treatment.
2. Groups are led by occupational therapist.
3. Emphasis is on interaction and interpersonal skills.



4. Groups are functionally based and focus on area such as functional living skills, energy conservation, debate and effective communication and family education.

### Phase 3 - Prevocational assessment

1. The first two sessions are devoted to a prevocational assessment. These assessments establish a baseline performance level and guides appropriate task selection.

3. The outcome measure as mentioned earlier is used here.

4. It guides appropriate secretarial task, and assembling task to be chosen as per the need of an individual client.

### Phase 4 - Therapeutic work groups

1. All Initial transition from role of client to the role of worker.

2. Client received 5 days per week for 30-minutes daily for 4 weeks.

3. The group structure includes sign an attendance register in and out, a daily routine, involved in variety of secretarial and assembly tasks.

4. Emphasis is on developing prevocational and work readiness skills, not on training for specific job.

### Assembling Task

#### Phase 5 - Work placement within the institute

1. Supervised work placements within the institute are available on block printing, appliqué & computer programming.

2. If only client show interest to participate then posted under vocational counselor for further guidance and training.

*Phase 6 - Back to previous job or supervised placement in community or further education and training.*

### Nut & bolt assembling



### Electric switch assembling



### Pen assembling



### Tightening screw

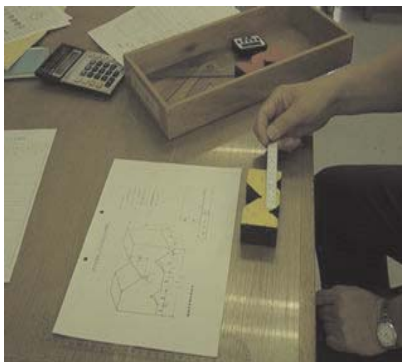


### Toys assembling



### SECRETARIAL TASK

Drawing & Designing



Inserting letter



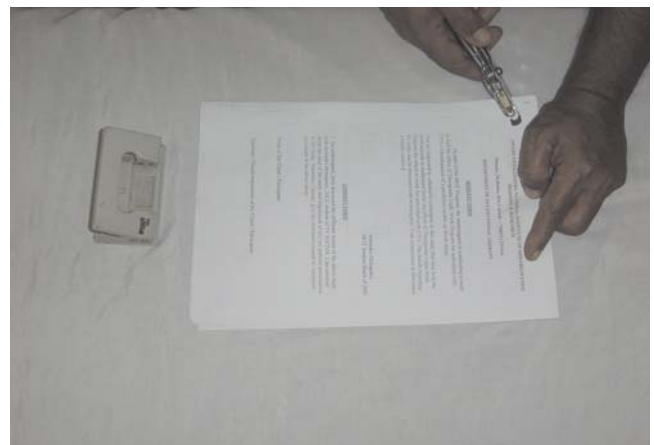
Applying stamp



Tie and Filling



Use Punching Plia



3. Previously employed client go back to their respective job.
4. Supervised placement in community
5. Clients engage in further education and training.

### Data collection evaluation

To evaluate the sustained impact of the MTWP, all clients with RA who have been discharge from it were requested to fill up the questionnaire. Out of the 30 identified, 3 could not be contacted, leaving a total of 27 clients. Information about the clients background, including dates of participation in the MTWP, year of impact by RA were obtained from initial general OT assessment format.

Questionnaire filled up by letter of post/ by email/ by telephone which consist of 21 open

ended and yes/no questions about vocational status, premorbid work history, and work attitudes and problems.

The research question to be evaluated-

1. Whether MTWP addressed, to enhance the OT work skills assessment for RA?
2. To evaluate if the program is successful for the client return to work, level of work satisfaction & self-performance level?

### Data analysis

Calculation was performed in SPSS (version 10). Statistical tests were carried with the level of significance set at  $p < 0.05$ . The independent t-test was used to compare the work skills result between the groups. The change in work skills within pre test and post test were analyzed using the paired t-test.

## DATA COLLECTION

Pre-test	Therapeutic work program Session	Post-test	Follow-up by Questionnaire based on return to work abilities
Pre therapeutic work skills measurement of each dependant variable for 30 clients.	Client engaged for 4 weeks in Therapeutic work group (20 sessions, 1 hour daily).	Work skills measurement of each dependent variable for same 30 clients after the completion of therapeutic work group session.	Questionnaire was used after 3 months since discharge from MTWP to find out work status.

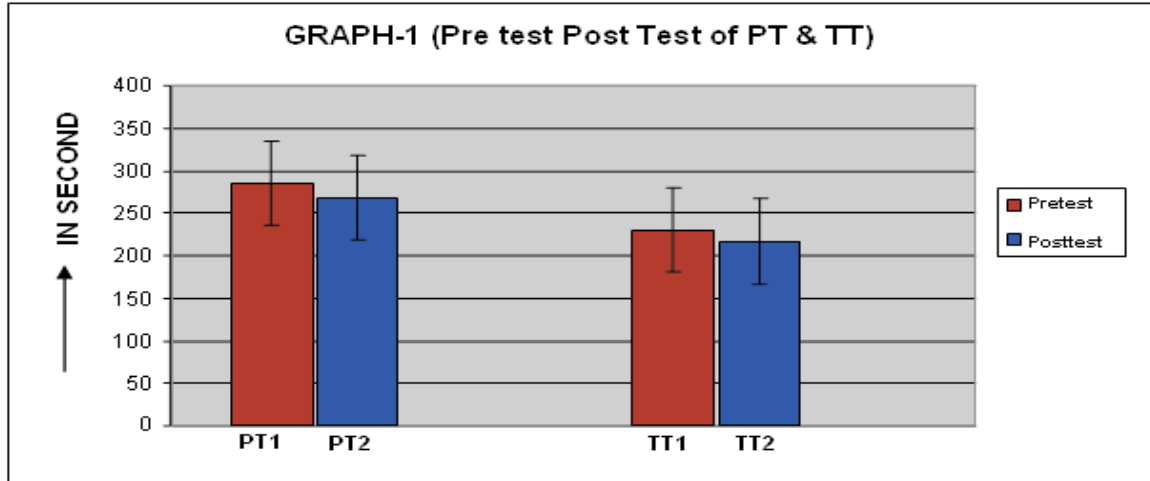
## RESULT & DISCUSSION

Graph 1to 4 shows, the mean pre-therapeutic work skills in compare to mean post therapeutic work skills after 4 weeks during MTWP .

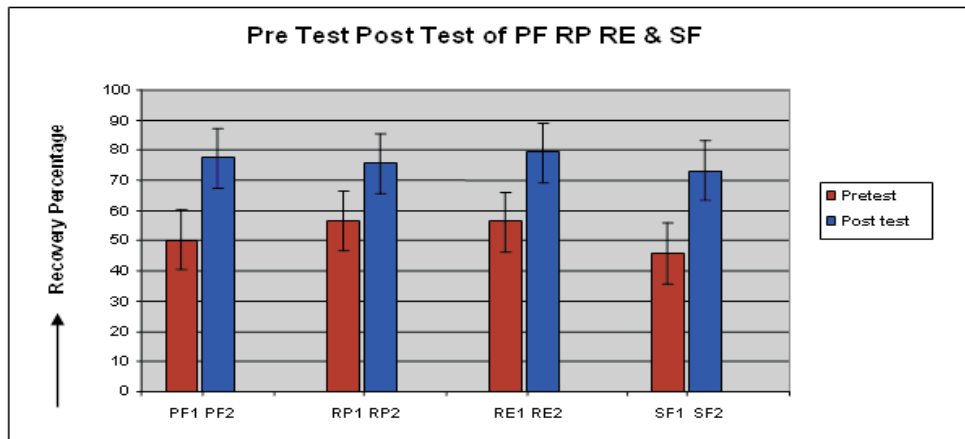
**Table 1 (Demographic Data)**

Sl.No.	Characteristic	Groups
01	No. of Subjects	30
02	Age range	30-56 yrs.
03	Mean age	42
04	Male/Female	15/15
05	Affected by Arthritis in Years	>5 yrs.

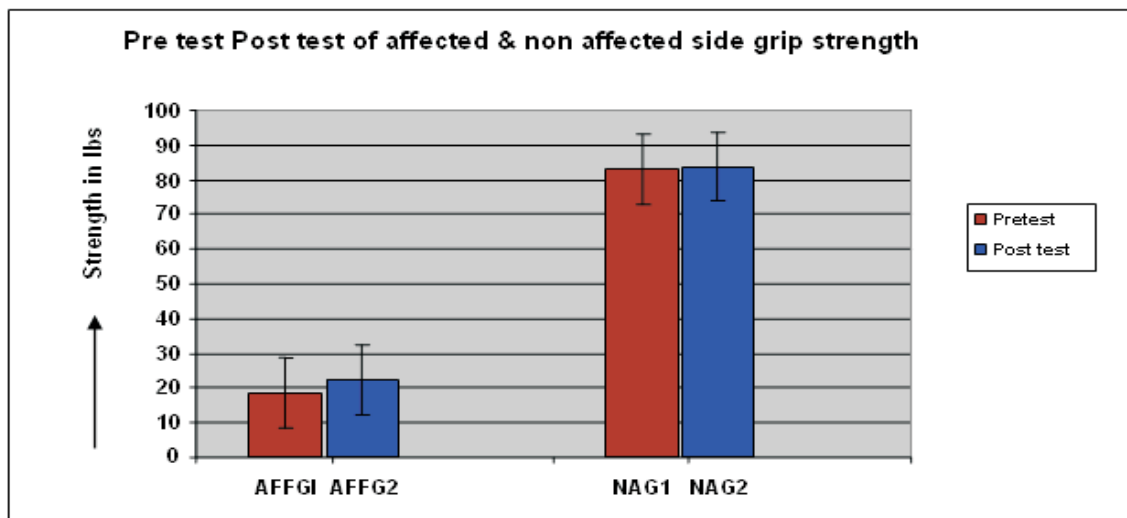
Graph 1



Graph 2



Graph 3





Graph 4

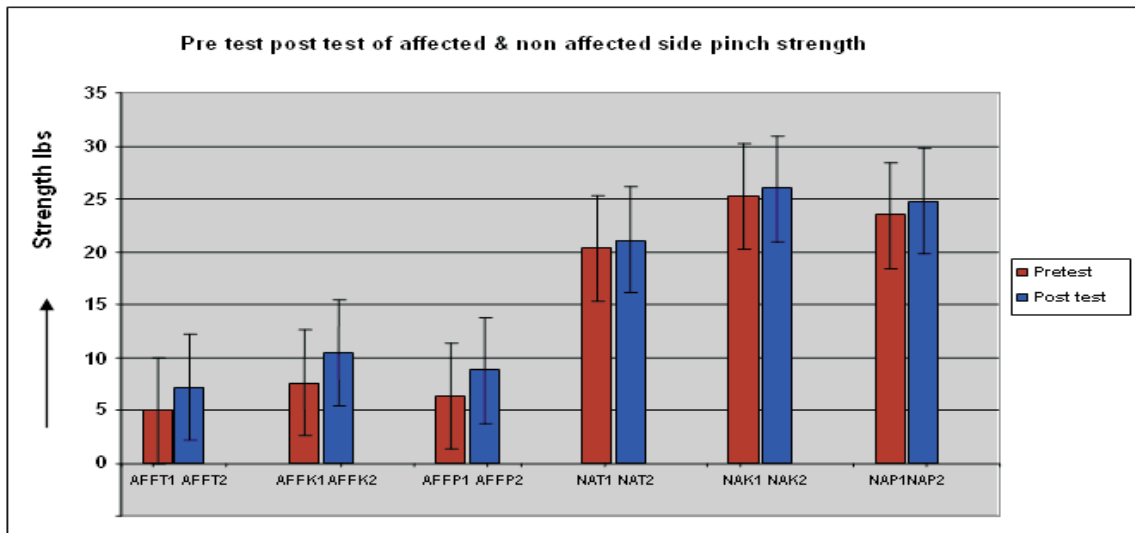


Table 2 (Paired Sample Test)

GROUP	Mean	SD	SE Mean	t	p
Placing Test(PT1-PT2)	15.38	6.34	1.31	12.78	0.01
Turning Test(TT1-TT2)	13.35	6.42	1.16	11.22	0.01
Physical functioning(PF1-PF2)	-24.87	6.46	1.14	-18.11	0.00
Role limitation to Physical Problems(RP1-RP2)	-18.00	7.22	1.50	-12.12	0.00
Role limitation to Emotional Problems(RE1-RE2)	-20.96	7.11	1.35	-14.66	0.00
Social functioning(SF1-SF2)	-22.41	10.21	1.75	-12.78	0.00
Grip strength Rt.( AFFG1-AFFG2)	-3.60	2.48	0.44	-6.92	0.01
Grip strength Lt.( NAG1-NAG2)	-0.62	0.52	0.14	-4.09	0.01
Tip to tip pinch Rt.( AFFTP1-AFFTP2)	-2.10	0.85	0.15	-12.20	0.00
Tip to tip pinch Lt.( NATP1-NATP2)	-0.72	0.66	0.12	-5.20	0.00
Key Pinch Rt.( AFFKP1-AFFKP2)	-2.66	1.22	0.18	-12.36	0.00
Key Pinch Lt.( NAKP1-NAKP2)	-0.62	0.72	0.12	-4.60	0.00
Palmar Pinch Rt.( AFFPP1-AFFPP2)	-2.40	1.02	0.18	-10.80	0.00
Palmar Pinch Lt.( NAPP1-NAPP2)	-1.20	1.62	0.30	-4.00	0.00

Table 2 shows the result which was analyzed by using paired t-test, found to be significant ( $p < 0.05$ ). The result of the analysis shows that there is significant improve in work skill post MTWP.

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**Table 3: Work status comparison of Pre MTWP and Post -MTWP Subjects (N - 27)**

Work Status	Pre- MTWP	Post -MTWP
Competitive employment	19	23
Homemaker	01	04
Trainee	01	00
Unemployed	06	00

As table-3 shows, out of 27 clients in pre-MTWP stage, 23 were competitively employed and 4 work as primary homemaker after participating in MTWP

**Table 4: Work type comparison of Pre-MTWP (N-21) and Post MTWP (N - 27) Subjects**

Work Type	Pre-MTWP	Present (Post-MTWP)
Managerial	02	07
Heavy labor	01	09
Light Labor	13	07
Student	01	00
Home maker	01	04
Others	03	00

Table-4 shows, the categories of post MTWP work vary from those prior to pre-MTWP. The clients did work that was different from the work they had done prior to the RA.

**Table 5: Work situation comparison preceding MTWP and following MTWP (N-27)**

Work Situation	Number of subjects (N -27)
Same company / Same position	08
Same company/ other position	10
Other company/same work type	02
Other company/other work type	07

Table-5 shows, the comparison of present job with former job. Return to the same or a different company was related to the length of time of prior employment

**Table 6: Number of jobs Held by Subjects since Discharge (N-27)**

Number of jobs	Number of Subjects
1( Full time)	19
2( 1Full time+ 1 Part time)	06
3& more( All Part time)	01
NR	01

Table-6 shows, 19 out of 27 subjects had one jobs, 06 had two jobs, 01 had three or more jobs since discharge from MTWP. The majority of respondent, 25 out of 27 were working 40 or more hours per week.

**Table 7: Subject Work Satisfaction (N=27)**

Liked their jobs	10
Job is challenging & look forward To going to work	08
Did not enjoy their work	05
Home makers want to be involved In competitive employment	03
No response	01

**Table 8: Subjective Work difficulty (N=27)**

Job required more physical demand	05
Job required high cognitive demand	10
Easiest job that repetitious, familiar & required few cognitive & physical demand	12

**Table 9: Self evaluation of job performance**

100 to 80 %of their prior level	08
80 to 65 % of their prior level	05
65 to 50 % of their prior level	08
50 % and below prior level	06

N= 27(comparing their present work skills with their skills prior to MTWP)

## CONCLUSION

The MTWP addresses the range of needs demonstrated by RA clients, from traditional therapy to prevocational and vocational intervention. The evaluation of the program indicates that the program was successful with RA working age adult. 72% clients who completed the program returned to same or modified work, and switched over to different position and different type of work. 44% clients return to competitive employment with same work type, work situation, having work satisfaction and 80-100% work skills in compare to pre-MTWP work situation.

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