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# Abstract

One purpose of the study is to evaluate the effects of hippotherapy on motor performance in individuals with disabilities. Fifty veterans will be recruited and receive traditional physical therapy and physical therapy including hippotherapy. Measures will be taken after each session and analyzed. This study will also evaluate the impact of the Beck PRIDE Center on health and well being and quality of life. It will document veteran completion of referrals and engagement with care across six domain areas. It will develop a program implementation manual that can be distributed to other educational institutions.

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INTRODUCTION

1) One purpose of the study is to evaluate the effects of hippotherapy on motor performance in individuals with disabilities. Fifty veterans will be recruited and receive traditional physical therapy and physical therapy including hippotherapy. Measures will be taken after each session and analyzed.

2) This study will also evaluate the impact of the Beck PRIDE Center on health and well being and quality of life.

3) It will document veteran completion of referrals and engagement with care across six domain areas.

4) It will develop a program implementation manual that can be distributed to other educational institutions.

The significance of these areas of investigation will further the model for civilian institutions to engage combat veterans with disabilities and their families on reintegration post employment.
HIPPOTHERAPY

Forty eight of the fifty proposed subjects have participated in this study to date. Subjects are veterans referred through Arkansas State University’s Beck PRIDE Center. These veterans vary in medical diagnoses including low back pain, lower extremity pain, upper extremity pain, and neck pain. After signing an informed consent document, the participants were examined by a licensed physical therapist at the Reynolds center on the ASU campus to determine if he/she could participate in the study. The qualified participants were then randomly assigned to either Treatment Group A or Treatment Group B via a coin flip. Treatment Group A is participating in both hippotherapy and traditional therapy, for one hour once a week; Treatment Group B is participating in traditional physical therapy, twice a week for one hour. Each participant will remain at that treatment schedule for 15 weeks. After 15 weeks the participant will switch treatment schedules. Therefore, in weeks 16-30, Group A will receive physical therapy twice a week and Group B receives hippotherapy. The study will last for a total of 30 weeks for each participant. Measurements were taken on all participants following each session. The results will be analyzed and compared to see if they are similar or different. This study is still in progress. No participant has received all sixty treatments in the study to date. However participants have received treatments in both Group A and Group B. Participates have had a variety of reasons for missing sessions including: vacation, illness of family members or self, school or work conflicts, other appointments and a variety of other issues. To address this issue additional hours and weekend appointments have been made available for the participants. All participants have been seen when available and data continues to be collected. All participants have reported some pain or lack of functional ability, therefore pain and functional scales have been used after each session and data has been recorded for analyses. Treatments indicate that participants receiving hippotherapy are showing an increase in function and decrease in discomfort at a faster rate than those receiving traditional physical therapy.

Beck PRIDE Center Annual Report: 2015

The Beck PRIDE Center at Arkansas State University was founded to assist combat wounded veterans with personal rehabilitation, individual development, and education in a university setting. As part of the overall grant, we are evaluating the impact of the Center on veterans’ health and well-being, and quality of life (referred to in this report as the “research project”). Specific services provided by the Beck PRIDE Center include the following:

- counseling (e.g., mental health counseling, rehabilitation counseling),
- physical rehabilitation,
- career development,
- resources and assistance for higher education,
- financial assistance,
advocacy,
community education,
socialization,
assistance with disability claims, and
support to achieve their post military service goals.

As of August 1, 2015, 155 participants were enrolled in the research project at the Beck PRIDE Center. Thirty-three have enrolled since August 1, 2014. Over the past year, each new participant has completed the SF-12 survey (a series of 12 questions measuring the participant’s perceived functional health and well-being); the Beck PRIDE Satisfaction Inventory (BPSI), which measures satisfaction in different life domains and of Beck PRIDE services; and the Quality of Life Index (QLI) which measures satisfaction with, and the importance of, different areas of life. Further, we have continued to monitor data gathered at intake and at follow-up visits, including participant demographics, education, and current treatment.

The remainder of this report is organized into 4 main sections based on data source: (1) SF-12 Health Score Summaries, (2) Beck PRIDE Satisfaction Inventory Summary, (3) Quality of Life Index Summary, and (4) Summary of additional intake and Follow-up data. These brief summaries present a picture of how the Beck PRIDE Center research project is progressing.

**SF-12 HEALTH SCORE SUMMARIES**
All 155 Beck PRIDE Center participants completed an SF-12 when they first enrolled in the study, and a 6-month follow-up SF-12 has been completed by 44 of those participants. The possible score range for the SF-12 is 0 to 100, with 50 being considered the population mean (with a Standard Deviation of 10). Overall, it appears that when compared with the general population, Beck PRIDE participants exhibit more physical- and mental-health problems. However, when looking at pre- and post-survey data from those participants who have completed the SF-12 a second time, those problems seem to be lessening, some significantly. Below is a breakdown of the physical-, mental-, and overall-health of the participants based on the data gathered thus far. We will continue to collect SF-12 data from the participants throughout the project.

**SF-12 Physical Health**
Overall, upon entering the Beck PRIDE Center, self-reports indicate that few participants fare better than the general population in physical health. Based on intake and follow-up data from 44 participants, there has been no change in the percentage who fall above the national norm for overall physical health. However, there are fewer participants falling below the national norm (i.e., doing worse than) and more who fall in line with the national norm. This indicates that after having participated in the Beck PRIDE project, many participants are doing better physically. The figure below (Figure 1) depicts the percentage of the research participants who are above, at, or below the general population norm in the physical health component of the SF-12 at both intake and follow-up.
SF-12 Mental Health
Similar to physical health (above), it appears that only a few Beck PRIDE participants fared better in self-reported mental health than the general population upon entering the program. At follow-up, however, participant mental health has improved based on the SF-12. In fact, the percentage of participants falling in the “above the norm” category doubled from intake to follow-up. The figure below (Figure 2) depicts the percentage of Beck PRIDE research participants who are above-, at-, or below-the general population norm based on the mental health component of the SF-12 at both intake and follow-up.

**SF-12 Overall Health**
As mentioned above, both pre- and post-survey data have been collected from 44 participants. Those data indicate that although over one-half of Beck PRIDE participants still fall below the general population scores in both physical- and mental-health, they do appear to be making gains in both areas as they participate in the Beck PRIDE Center. In the physical realm, Bodily Pain has improved significantly from intake to follow-up (from a mean score of 36 to 40, t(43)=−2.53, p<.02). In the Mental realm, both social functioning and general mental health have improved for participants. Social Functioning scores have increased from a mean score of 35 to a mean
score of 39 (t[43]=-2.19, p<.04). Mental Health scores have increased from a mean score of 37 to a mean score of 41 (t[43]=-2.79, p<.01). The figure below (Figure 3) shows overall participant self-reported physical- and mental-health status (using the Physical Component and Mental Health Component summary scores) at both pre- and post-testing for those 44 participants on whom we have follow-up data. We will continue to conduct follow-up assessments using the SF-12 to monitor Beck PRIDE participant health.

**Figure 3: SF-12 Health Score Summary**

(N=44)

**BECK PRIDE SATISFACTION INVENTORY SUMMARY**

The Beck PRIDE Satisfaction Inventory (BPSI) has been completed by each of the 155 Beck PRIDE participants at intake, and by 47 of the participants at 6-month follow-up. The BPSI measures the general satisfaction and quality of life of the veterans. With the BPSI, participants are asked to rate their satisfaction with the following eight domains of their lives: (1) Education, (2) Career Prospects, (3) Social Life, (4) Family Life, (5) Health, (6) Physical Activity, (7) Recreational Activity, and (8) Work Life.

Generally, when participants come to the Beck PRIDE Center, their overall quality of life score (based on the BPSI) is somewhat low, with an aggregated mean across participants of 2.5 on a scale from 1 to 4 (1=no satisfaction, 2=a little satisfaction, 3=quite a bit of satisfaction, and 4= a great deal of satisfaction). When compared to when they first started the Beck PRIDE project,
data indicate that there have been no significant changes in participant satisfaction on the BPSI to date, but that there is movement toward improved satisfaction with life for those on whom we have follow-up data (e.g., the overall mean satisfaction score at intake was 2.37, at follow-up it was 2.46). Likewise, participant satisfaction in most areas appear to be headed in the right direction, but not to the level of statistical significance. Intake and follow-up BPSI means by domain are reported in Table 1 below. As with the SF-12, we will continue to collect BPSI data from the research participants as they come in and at the time of follow-up.

<table>
<thead>
<tr>
<th>How much satisfaction do you get from...</th>
<th>Mean Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intake</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>2.53</td>
</tr>
<tr>
<td><strong>Career Prospects</strong></td>
<td>2.43</td>
</tr>
<tr>
<td><strong>Social Life</strong></td>
<td>2.21</td>
</tr>
<tr>
<td><strong>Family Life</strong></td>
<td>2.79</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td>2.40</td>
</tr>
<tr>
<td><strong>Physical Activity</strong></td>
<td>2.40</td>
</tr>
<tr>
<td><strong>Recreational Activity</strong></td>
<td>2.34</td>
</tr>
<tr>
<td><strong>Work Life</strong></td>
<td>1.83</td>
</tr>
<tr>
<td><strong>OVERALL SCORE</strong></td>
<td>2.37</td>
</tr>
</tbody>
</table>

**QUALITY OF LIFE INDEX SUMMARY**
Each veteran participating in the Beck PRIDE study completed the Quality of Life Index (QLI) Generic III Version during the initial intake interview (the QLI is not administered at follow-up). The QLI assesses quality of life by measuring the general satisfaction with and perceived value of different areas of life. Questions are rated on a scale from 1 to 6 (with 6 being “very satisfied” or “very important”). Five scores are calculated for the QLI: (1) Overall Quality of Life score, (2) Health and functioning subscale score, (3) Social and economic subscale score, (4) Psychological/spiritual subscale score, and (5) Family subscale score. Subscale scores range from 0 to 30 (with higher numbers reflecting higher quality of life). Table 2 below shows the five Quality of Life subscale scores for veterans participating in the study. Complete subscore data are only available for 148 to 149 participants (depending on the subscale).

**Table 2: Quality of Life Index Subscale & Overall Scores at Intake**

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Number of Respondents</th>
<th>Mean Score*</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health &amp; Functioning Subscale</td>
<td>149</td>
<td>16.39</td>
<td>6.56</td>
</tr>
<tr>
<td>Social &amp; Economic Subscale</td>
<td>149</td>
<td>17.65</td>
<td>6.26</td>
</tr>
<tr>
<td>Psychological/Spiritual Subscale</td>
<td>148</td>
<td>17.97</td>
<td>6.70</td>
</tr>
<tr>
<td>Family Subscale</td>
<td>148</td>
<td>21.19</td>
<td>6.33</td>
</tr>
<tr>
<td>Overall Quality of Life Index Score</td>
<td>149</td>
<td>17.69</td>
<td>5.88</td>
</tr>
</tbody>
</table>

*Mean scores range from 0 to 30

The results from the QLI show that, at intake, veterans in the study report a mediocre quality of life overall (mean = 17.69, on a scale from 0 to 30). Family Life (e.g., family health, children,
and family happiness) appears to be the domain in which participants experience the highest quality of life (mean of 21.19). In contrast, participants report their health as the least satisfying/important area, with a mean score of 16.39 on the health and functioning subscale (e.g., health care, energy, usefulness to others, and worries). The higher score on the family subscale may be related to many veterans reporting a spouse or parent as a support system. The lower health and functioning subscale score may be related to the fact that most veterans participating in the study report varied medical or physical issues. The other subscale scores display a more intermediate quality of life.

**SUMMARY OF ADDITIONAL INTAKE & FOLLOW-UP DATA**

Below is a summary of 6 key areas assessed during the intake process for the Beck PRIDE Centers: (1) Demographics, (2) Assistance Sought from Project, (3) Deployment, (4) Medical or Physical Issues, (5) Current Treatment/Resources, and (6) Community Support/Outreach. As with the three assessments discussed above, we have intake data on all 155 participants. Below, we provide a brief description of those data.

**Demographics.** The majority of the Beck PRIDE participants are male (93%) and Caucasian (74%). Currently, participant ages range from 23 to 70 years old, with a mean age of 36 years old. Reports of marital status show that around half are married (49%), one-quarter are single (25%), and 18% are divorced. Fifty-six percent of participants have been married once, 29% report never being married, and 12% have married twice.

**Assistance Sought from Project.** Many of the veterans who come to the Beck PRIDE Center request assistance for their education needs. Out of the participants who responded to the education items on the intake, 50% report needing educational advising, 20% need testing/placement/assessment assistance, and 18% need tutoring/mentoring/study skills assistance. In addition, 37% of participants report needing Vocational Rehab assistance, 38% request GI Bill benefit assistance, and 35% need scholarship/other financial aid assistance. Other types of assistance requested include career advising (33% of participants request this), cultural and social enrichment assistance (16%), and employment services assistance (12%).

**Deployment.** In order to receive services from the Beck PRIDE Center, veterans must have fought in a present day conflict (from Persian Gulf to present). Just over one-half of the Beck PRIDE participants have been deployed one time (56%), whereas about one-third of participants report being deployed twice (33%). Iraq and Afghanistan are the two most common deployment locations among the participants (68% and 38%, respectively). Contact is maintained with military units from Northeast Arkansas that have deployed and services offered to family members as needed.

**Medical or Physical Issues.** Beck PRIDE participants report a number of medical or physical issues when entering the project. A majority of those issues appear to be a result of their combat-related experiences and exposure to a warzone environment. Of the participants who responded to the impairment items on the intake form, 79% reported suffering from mobility impairments (e.g., back, knee, or shoulder pain), 75% reported suffering from sleep problems (e.g. sleep apnea or insomnia), and 72% reported hearing impairments (i.e., hearing loss or tinnitus). Other major issues with returning veterans are Post-Traumatic Stress Disorder (PTSD)
and Traumatic Brain Injury (TBI); about two-thirds of participants reported having PTSD (63%) and about a third reported having TBI (28%). Participants have been referred for physical therapy and hearing testing at no charge. Mental health services for the veteran and for dependents have been provided at no cost. Veterans have utilized services when they cannot drive the extended distance for treatment due to time, employment, or cost. A weekly combat support group is offered. A transition support group and marriage enhancement group was offered in the fall of 2014. Tax preparation services and understanding finance workshop has been offered twice and will be repeated in the fall of 2015.

Current Treatment/Resources. As stated earlier in the report, many veterans come to the Beck PRIDE Center requesting education advising assistance. Many also come to the Beck PRIDE Center requesting assistance with their Veteran’s Affairs claims or disabilities; 50% of the veterans requested assistance for VA Benefits Disability Determination and 40% requested assistance for VA Benefits Enrollment. Ten percent of participants requested outpatient mental health counseling, 7% requested individual mental health counseling, and 5% requested support group mental health counseling. Collaborative services with VA resources to meet those needs have included hosting events with service officers and vocational rehab staff to meet with veterans locally. The Beck PRIDE Center hosted the town hall meeting for the Memphis, TN. and Little Rock, AR. VA Directors to meet with veterans in North East Arkansas. Support is provided to the Purple Heart Association and Disabled American Association (DAV) groups and DAV service officers to assist veterans with questions and claims process at the Beck PRIDE Center.

Community Support/Outreach. Anecdotally, a large percentage of the veterans who enter the Beck PRIDE Center appear to be socially withdrawn during the initial intake visit, and, in fact, on the BPSI their social life scores tend to be among the lowest across the domains. The Beck PRIDE Center has a strong focus on assisting veterans with socialization and provides opportunities for veterans to take part in various social settings. One such opportunity is R & R Wednesdays, which are held each month. R&R Wednesdays allow veterans to gather at the Beck PRIDE Center to eat lunch and socialize with fellow veterans. The Beck PRIDE Center also encourages the veterans to be a part of community organizations (e.g. DAV, VFW, Wounded Warrior, ASVO) in which they have the opportunity to connect with other service members and begin feeling involved in society again after being discharged from the military. In these groups, veterans are able to be themselves and share their own experiences with others who can empathize with them. In the current Beck PRIDE research population, 81% of the participants say they do not belong to any community veteran organization upon entering the program but are strongly encouraged to investigate some of the local community groups. A student veteran association was formed on campus to engage and support veterans in service projects and campus activities individually and with their families. The center provides activities for the veteran’s extended families twice a year to meet and to meet local service providers. Three community workshops have been completed with continuing education units provided to mental health providers and clergy. The workshop’s topics were moral injury, suicide prevention, and overmedication issues with PTSD and TBI. Approximately three hundred participants have attended. A fourth workshop is scheduled for October, 2015 and the topic is substance abuse. Presentations about veterans needs have been made to various community groups with an
emphasis on employment for veterans that completed their education. Four employers have sought participants to fill their job postings.

NEXT STEPS
As reflected above, when participants come to the Beck PRIDE Center, they may have physical or mental health issues, they are not totally satisfied with their lives, and they are in need of various types of assistance. It appears that the Beck PRIDE Center is a mechanism to raise those satisfaction levels and provide assistance, and as we have received more follow-up data, we are seeing those effects. Beck PRIDE Center staff will continue to monitor participant progress in the key areas identified in this report by collecting baseline and follow-up data on the SF-12, the BPSI, and other general follow-up forms. In addition, because there has been some difficulty in obtaining follow-up data from Beck PRIDE participants, the project’s staff will continue working on additional mechanisms by which those data can be obtained more easily and more reliably. One example is working with the Memphis VA hospital Caregiver program to provide a support group to the caregivers of veterans that are located in Northeast Arkansas and Missouri. The support group will start in September, 2015. Our goal is to continue monitoring gains and to provide data to evaluate the impact of those gains.
KEY RESEARCH ACCOMPLISHMENTS

Tasks Accomplished
Objective 1 & 2

SOW- Task 1: *IRB expedited review.* Completed.

SOW-Task 2: *Establish data collection and data entry systems.* This task was developed pre-implementation of the research project. The measures used to track the progress of research participants are administered to them at the time of their intake. The research assistant makes a copy of all the necessary research items from the original file and creates a research file for each participant. These files are stored behind two locks in the Director’s office. With each file, the intake information of each participant as well as the three survey instruments are entered into an Excel spreadsheet and then copied into a statistical package (SPSS) ensuring accuracy.

SOW-Task 3: *Recruit Staff.* Lynda Nash is the Project Director, Kelly McCoy is the Project Manager, and Randall Murray and Wesley Gautreaux are the Research Assistants on the project.

SOW Task 4: *Enrolling new cohort.* Since the first research participant was enrolled on January 12, 2012, the enrollment process has been continuous with the current enrollment standing at 155 participants. Although some months have been slower than others, we are still averaging five to six new participants a month. The task of enrolling a new cohort is steady and continuous.

SOW Task 5: *Collect data pre/post.* The task of collecting pre and post data on each veteran is with hopes of following their improvement longitudinally. Pre data on the other hand, is collected before the veteran receives any of Beck PRIDE’s services at their initial intake visit.

SOW Task 6: *Analyze Data.* The process of analyzing data takes place frequently. When quarterly reports are submitted, data is analyzed and the demographics, services needed, etc., are identified. Through the process of analyzing the data, the Beck PRIDE Center has been able to look at what veterans need whenever they come for assistance. With that knowledge, the staff is able to see where the need is the greatest for veterans.

SOW Task 7: *Report Data.* Data has been reported to the Department of Defense every three months since the research project has begun. The findings of the data analyzed in the Beck PRIDE office have been reported quarterly and now with this fourth annual report. Beck PRIDE’s research assistant on the project has filtered what data is significant to include in each report and what is acceptable to be omitted. Anomalies and major areas of similarities, as well as grave needs have been included in the previous reports. These concepts will continue to be reported in future reports.
SOW Task 8: *Follow existing cohort.* A system is in place to follow the existing cohort of the project. The research assistant contacts participants who have reached or need to come in for a 6-month visit. The three survey instruments administered at the intake are also administered at each follow-up appointment at 6-months since their last visit. Participants are encouraged to check in with Beck PRIDE from time to time in addition to their 6-month follow up appointments. The follow-up process has been in place and data is currently being collected.

SOW Task 9: *Collect discharge data.* Discharge data has been collected, analyzed, and reported on 44 participants. We will continue to collect and analyze data on those discharged, who have met goals or voluntarily left the research project.

SOW Task 10: *Analyze discharge data.* As noted in the report.

SOW Task 11: *Report discharge data.* As noted in the report.

Objective 3:

SOW Task 1: *Order hippo equipment.* Completed.

SOW Task 2: *Install equipment.* Completed.

SOW Task 3: *Recruit subjects.* Ongoing (49 of 50 recruited).

SOW Task 4: *Initiate hippo research.* Ongoing.

SOW Task 5: *Collect data.* Ongoing.

SOW Task 6: *Analysis & Report.* Early review of limited data. Some discussion was included in the “Body” of the document.

Objective 4:

SOW Task 1: *Development of the draft manual.* As discussed in the October 2012 annual report, a meeting of the research group was held to discuss the design of the implementation manual. Dr. JoAnn Kirchner, a consultant on the project, also attended and worked with the research group on the development of an outline of the creation of the Beck PRIDE Center. A timeline of
the creation process was developed following the meeting and distributed to the research group. A second meeting of the research group with both Mark Reeves and Mary Williams from ASU Publications and Creative Services in attendance. The design for the implementation manual was decided upon and group members were assigned tasks for compilation of the content information. A third meeting between Mark Reeves, Sandra Worlow, and Dr. Hanrahan occurred just prior to the October 2012 annual report, and refinement of draft one content was discussed. An early draft was reviewed in late October by the Beck PRIDE Center National Advisory Committee. The design and content areas were reviewed, and several of the committee members offered suggestions which were incorporated in the manual design.

**SOW Task 2: Send out for review and modification.** During the second year of the project, the implementation manual was sent out to a much larger group for review. Suggestions were taken into account and incorporated into the current edition of the manual. A final draft was disseminated to the edit team. The manual is complete.

**SOW Task 3: Disseminate manual.** The manual has been disseminated to hundreds of higher education institutions, policy makers & other interested parties. The manual won the Gold Award in its category in the annual competition sponsored by the Council for Advancement and Support of Education, District IV. It is continuing to be utilized on an as-needed basis.
REPORTABLE OUTCOMES

Noted in the body of the report.
CONCLUSION

The project has continued to move at a steady pace. There have been no issues with equipment purchases, participant recruitment, software utilization or data collection to date. To ensure better compliance with hippotherapy clients, schedules have been modified. The manual continues to be distributed.

Progress has been timely as noted on the SOW.
REFERENCES
APPENDICES