Self-Efficacy, Kinesiophobia and Pain Anxiety as Predictors of outcomes from Rehabilitation for Low Back Pain

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Abstract

Low back pain (LBP) has been a growing health problem due to its excessive costs, incidence and prevalence. The development of chronicity has added to the burden of low back pain to our society. In an effort to better understand the development of chronicity and treatment of LBP, three cognitive factors (the Tampa scale of kinesiophobia, Pain Anxiety Symptoms Scale -20 and Self-Efficacy of Rehabilitation Outcomes) were examined in correlation with physical therapy outcomes, including days to discharge and perceived disability. The results indicated that only self-efficacy was predictive of both days to discharge from therapy and perceived disability ($p \leq 0.05$). The directional hypothesis that self-efficacy scores would have negative correlation with days to discharge was rejected though, due to the positive correlation found.

1. Introduction

1.1 Low Back Pain

Low back pain (LBP) is a common, yet poorly understood public health problem. It has been said that, "Back pain is a pervasive symptom of minimal importance in most societies."[10] Back pain has increased in the past 30 years, and has cause for great social concern due to the costs and societal consequences. According to a study by Frymoyer and Cats-Baril, disabiling back pain is primarily a psychosocial phenomenon. They went on to estimate that the total costs of low back pain would reach the 75 – 100 billion dollar range for the year 1990.[10] Due to inflation, increased health care costs and an aging population, it is easy to see how finding the most effective and efficient method to treat low back pain should be of the utmost importance to our current society. Both physiological and psychological factors play a role in the development of LPB. Abnormal connective tissue structure has been found in patients with chronic or recurring LBP when compared to non-clinical samples, supporting the role of physiological factors related to back pain.[12] Annual incidences of LBP have been shown to vary from 1% to 20%. Incidence refers to the number of new cases occurring in a population over a given time period. At any given time, 15% to 20% of people state that they are currently having back pain. This refers to the prevalence of the condition, which is the number of people at a give time who have LPB.[10] It has been determined that only slight improvements in pain intensity, related to LBP, occurs from 1 year to 2 years after treatment. It is then appropriate to say that the previously employed methods for treating LBP are not adequate at preventing chronicity and its related pain. Treatment methods typically used include physical therapy, cognitive therapy and medication. Back pain patients are

prescribed opioids close to 30% of the time, with the long term use of sedative-hypnotics and opioids prescribed approximately 5% of the time.[25] In a separate study by Williams et al, it was discovered that the health care costs specifically for LPB were "disproportionately distributed along the disability curve, with 20% of claimants disabled 4 months or more, accounting for 60% of health care costs." Furthermore, physical therapy accounted for 20% of these costs. The study goes on to point out that, "the consistently high and continually increasing growth of PT costs across each disability interval suggest that lower-cost alternative are not being widely considered. If such alternative are demonstrated to be equally effective, significant savings might result."[26] Other research has shown that back symptoms rank second among presenting complaints in their case-loads, with patients ranging from 25-65+ years old representing 70% of the total LBP population.[7]

In the past, health care professionals have been able to understand and treat the physiological factors related to the patients' pain. Typical prescriptions for LBP have included physical therapy, drug therapy and the prescription of medication, along with medical counseling. Often some combination of the three are used to treat LBP.[7] The relationship between physical damage to tissue and the development of LBP is not all encompassing, nor is it definitively causational. Previous research has shown that when being treated for the physical symptoms of LBP, 70% still had pain after four weeks, 48% after 8 weeks, 35% after 12 weeks and 10% of patients still had pain after one year. In one study, 76% of patients whose episode of back pain ended before the follow-up had recurring symptoms of LBP.[23] Many studies have operationally defined chronic low back pain as pain lasting three months or longer.[5,11,19,21,28] In light of the aforementioned statistics, this would equate to 35% of patients developing chronicity when being treated for LBP. In light of our

deficiencies at treating the physiological factors, it may be that psychological factors related to the development, treatment and recovery of LBP are more predictive of the outcome of therapy. In fact, it has been stated that "fear-voidance beliefs have been hypothesized as the most important psychosocial factor in predicting disability among patients with LPB."[4] All factors related to the treatment of LBP must be given greater attention in the future.

1.2 Physical Therapy

Physical therapy is a common and generally accepted method of treating LBP. Doctors of Osteopathy have been shown to prescribe up to 83% of their patients presenting with LBP to physical therapy as the preferred method of treatment.[7] The primary goal of the physical therapist is to help patients resume normal activities of daily living as quickly and effectively as possible.[17] Exercise therapy traditionally has played an important role in this method of treatment. In the experience of the author, exercise therapy can consist of stretching, along with static or dynamic low velocity muscle contractions in a gym or aquatic setting. Moffett and McLean stated that "exercise is a first-line approach that is recommended for back pain and neck pain that is not resolving over a few weeks. Since no one form of exercise as been shown to be particularly effective, the choice of exercise will depend on the individual's preference."[17] Exercise as therapy has further been validated as an effective means of treating LBP because home exercise programs (HEP), with a focus on trunk stabilization, are beneficial for the decrement of pain, disability and the increase of function. Similarly, activity fluctuations have been passively associated with perceived disability.[11,21]

2. Theoretical Framework

In order to best provide effective rehabilitation for LBP it is necessary to explore both physiological and psychological factors as predictors of disability and rehab outcomes. Previous research has suggested that higher levels of self-efficacy and lower levels of catastrophizing have been related to lower levels of pain intensity. To expound further, pain-related fear is not a unique predictor of disability, rather, functional self-efficacy was most strongly related to disability.[27,28] Other research related to functional self-efficacy has shown that it is also predictive of Functional Capacity Evaluations (FCE) with both chronic LBP patients and control groups.[2] The implication is that the higher a patients efficacy, the less disabled they are. Higher adherence to both duration and frequency of HEP's has also been associated with higher functional self-efficacy scores.[16]

It has been suggested that there is no significant correlation between cognitive factors and pain intensity, although increased perceptions of control of pain are predictive of disability.[29] There has also been support for a stepwise deterioration in disability, psychological factors, and physical performance from a healthy control group to patients with chronic LBP. This suggests that these factors may play some role in the development and treatment of LBP.[4] Lastly, in a literary review by Vlaeyen, it has been shown that both kinesiophobia, as measured by the TSK, and pain anxiety, as measured by the PASS are moderately correlated to perceived disability. In the literary review it states that Vlaeyen and Crombez both found the TSK to positively correlated with perceived disability, $r = 0.43\text{-}.56$ ($p \leq 0.01$). The PASS total scores, as found by McCracken, also correlated with perceived

disability, $r = 0.61$ ($p \leq 0.001$).[24] All of the aforementioned research suggests that cognitive are important to rehab outcomes, although the outcomes aren't completely conclusive.

Despite the previously stated results, there has been some conflicting research in this area. It was found in a study by Schiphorst that psychological factors are not predictive of performance based evaluations or self-reported disability as related to chronic LBP, with only kinesiophobia contribution significantly.[19] This creates confounding ideas which warrant further investigation. In light of the aforementioned research, the current study will look at the role cognitive factors play in perceived disability and days to discharge from therapy for LBP. The measures to be used are the Tampa Scale for Kinesiophobia (TSK), the Pain Anxiety Scale – 20 (PASS-20) and the Self-Efficacy for Rehabilitation Outcomes Scale (SER). The outcomes to be used are: perceived disability, as measured by the ODI, and days to discharge from physical therapy. It was hypothesized that there would be a positive correlation between the TSK/PASS-20 and both the ODI and days to discharge and a negative correlation between the SER and both the ODI and days to discharge. More simply put; higher kinesiophobia and pain anxiety scores and lower self-efficacy will result in greater perceived disability and longer days to discharge from therapy for LBP.

3. Measures

3.1 Kinesiophobia

Kinesiophobia is one of the most extreme forms of fear related movement. The TSK was developed to assess kinesiophobia and discriminate between patients whose fear was excessive, and those who respond normally. The TSK is comprised of 17 questions rating the degree of kinesiophobia. Each item is scored according to a 4 point Likert scale ranging from

strongly disagree to strongly agree. After the inversion of questions 4, 8, 12 and 16, a total sum can be calculated. The higher the collective sum of the items, the higher the level of kinesiophobia. The TSK was found to have good test-retest reliability with Pearson's $r = 0.78$ ($P \leq 0.01$). With the deletion of the reversed items, 4, 8, 12, 16, the reliability increases slightly to $r = 0.79$ ($P \leq 0.01$).[20] In light of the aforementioned statistics, the TSK is a reliable assessment which can be used to determine the measure of Kinesiophobia.

3.2 Pass-20

The PASS-20 is a shorten version of the original Pain Anxiety Symptoms Scale (PASS), which was developed "as a general measure of anxiety and fear in individuals with various chronic pain disorders."[15] The original PASS survey was developed to assess four pain constructs related to pain anxiety, including 1) Fear of Pain, 2) cognitive anxiety, 3) escape-avoidance behaviors and 4) physiological symptoms of anxiety. The items are measured on a 7-point Likert scale (0-6), with 0=never and 6=always. In the past, analyses of the PASS support the reliability and validity of the construct as a measure of pain related fear and anxiety. Results have also shown that it has good concurrent validity in relation to measures of disability, depression, and medication use, all being consequences of chronic pain.[15] The PASS-20 has been favored in the past in situations where there are time constraints. It is an accepted measure because it "preserves the factorial validity of its parent measure."[5] For the sake of this study, the shortened PASS-20 was chosen due to its greater convenience to the subjects, with the hope of decreasing drop-out rates. The choice of PASS-20 over the original 40-item PASS is justified as it has a Pearson correlation coefficients of r = 0.98 with the original PASS.[18] Correlations for both the original PASS and the PASS-20

with pain-related measures were similar, indicating good convergent validity. Internal consistency reliability was adequate to excellent.[18] The PASS-20 scores were also found to be lower in non-clinical samples then they were with patients known to suffer from chronic pain, further providing support for its use.[1]

3.3 Self-Efficacy

Self-efficacy as defined by Bandura is, "a belief in ones personal capabilities," and plays an important role in human function in four major ways. These included 1) Cognitive functioning; a person with high efficacy will have high aspirations, set difficult challenges for themselves and be committed to meeting those challenges. 2) Motivational: a person with high self-efficacy will have stronger motivation because they will be able to attain their goals and adjust them based on set backs they may encounter. 3) Mood or Affect: High self efficacy will lead to people lowering stress and anxiety by deflating threatening situations they may come across, along with diverting their attention, relaxing and relying on a good social network in such situations. 4) Depression: people with low efficacy self-defeat their own hopes, lowering their mood, which will further weaken their efficacy, further lowering their mood.[3] The SER for low back pain was used as a predictive measure in this study. The survey provides 12 questions regarding ones ability to perform activities in therapy related to the treatment of their back. Each of the 12 questions starts with the statement, "During my rehabilitation, I believe I can do…" followed by a statement related specifically to rehabilitation. Each item was to be answered according to an 11-point scale ranging from 0 to 10, where zero correlates with the statement, "I cannot do it," and 10 means, " I am certain I can do it." A low score relates to low perceived self-efficacy, while a high score predicts high

perceived self-efficacy. Scores can range from 0 to 120. As previously mentioned, a high score would predict that a subject had a higher belief in their capabilities related to therapy than a low score would (See appendix A). Self-efficacy is an acceptable construct to use in the current study because it has excellent internal consistency ($a = 0.88$) and good test-retest reliability ($r = 0.88$).[28]

3.4 The Oswestry Disability Index

The three previously mentioned assessments were used in the study to measure the subjects' level of kinesiophobia, pain anxiety and self-efficacy. The Oswestry Disability Index (ODI) was also used to assess the patients self-assessed level of disability, separate from the evaluation which was performed by the therapist/doctor upon discharge. The ODI is a questionnaire which contains ten sections which have been shown to limit activities of daily living. These ten sections include 1) Pain Intensity, 2) Personal Care, 3) Lifting, 4) Walking, 5) Sitting, 6) Standing, 7) Sleeping, 8) Sex Life, 9) Social Life and 10) Travelling. Each of the ten sections contains six statements. "Each statement describes a greater degree of difficulty in that activity than the preceding one."[8] For example, in the lifting section, the first question states, "I can lift heavy weights without extra pain," while the last question states, "I cannot lift or carry anything at all." Each subject is required to mark one of the six statements that best describe their relationship to their disability, which is then scored according to a 0-5 scale, with 5 representing the greatest amount of disability. The original ODI was designed to be a self-administered questionnaire, which helps eliminate any interviewer bias in the study. It has good test-retest reliability, ranging from $r = 0.83$ to $r = .99$ ($P \leq 0.001$), depending on the length of time between test-retest. It also has good

internal consistency, ranging from $\alpha = .71$ to .87.[9] To determine the level of a given patients disability, the sum of all 10 sections is found, divided by the maximum total score of 50 and converted into a percentage. To further categorize a population, the score on the ODI can be divided into the minimally disabled (0%-10%), moderately disabled (20%-40%), severely disabled, (40%-60%) and crippled (60%-80%). The 80th to 100th percentile is defined as bed-bound or exaggerating.[8,9]

4. Methods

The subjects of the current study were all consenting patients who were presenting with LBP and volunteered to participate in the study. Inclusionary criteria included that each patient had a prescription from a doctor to receive physical therapy for their LBP. Exclusionary criteria included herniations, cists or tumors which were known to be impinging nerve roots at the lumbar regions where the pain was manifested. Patients presenting post-operative therapy were also excluded from the study, as it would have been difficult to separate non-specific low back pain from pain resulting from surgery. Each of the subjects was given a brief overview of the study, its stipulations, minimal time commitments, and a brief description of what each of the assessments measures (i.e. Kinesiophobia, Pain Anxiety, Self-Efficacy). Originally it was proposed that each subject would complete the first three surveys during the initial evaluation at therapy. A therapist, researcher or technician was available to answer any questions related to the surveys. Many of the subjects only consented to the participation of the study if they were able to take the surveys home. This was agreed upon because of the limited number of subjects, under the stipulation that they return with the surveys during the

next therapy session. It was important to have all participants take the survey at the same time during their therapy to help limit any variance that might be caused by maturation. Cognitive factors like self-efficacy have been found to change during therapy and the recovery process from injury.[22] Having all patients fill out the surveys at the same time was a way to try to control this extraneous variable. Each subject's identity was held anonymous to the rest of the population. This prevented the subjects from introducing error through selection interaction. The expected outcome of the study was also withheld from the subjects to prevent any error from the John Henry effect. This refers to an outcome that has been affected because of the knowledge of its expectation. The final survey, the Oswestry, was completed by each subject upon discharge from therapy. Discharged was determined in a joined effort between the therapist and the referring physician. This tended to consist of a functional capacity evaluation, evaluation of the patients overall pain levels and their return to normal activities of daily living. It wasn't possible or practical in this situation to require each therapist to conform to a standardized method of evaluation, different from what they were familiar with. Upon discharge, the subjects' file was sealed. When all the data had been collected, all forms containing the subjects' identity were removed and a number was randomly assigned to each data set. This ensured the complete anonymity of each subject participating.

5. Data/Results

Twenty-three patients presenting with LBP were recruited for this study, with 20 of them eligible to participate. The three who were dropped were done so because they hadn't completed their therapy, didn't properly complete the questionnaires, or became surgical

candidates. With the status change to surgical candidate, the focus of the therapy changed from helping the patient return quickly to activities of daily living to maintaining strength and flexibility to quicken the eventual recovery process from surgery. Pearson-R correlations were computed between each predictive measure and both of the outcome measures. (TSK v ODI, TSK v DTD, SER v ODI, SER v DTD, PASS-20 v ODI, PASS-20 v DTD). Coefficients of determination, and p-values were also calculated.

Cognitive measure in respect to ODI scores	**Pearson-R Correlation (*r*)**	**p-value**	**Coefficients of determination r^2**
PASS-20	0.2347	0.160	0.0551
SER	-0.5254	0.009	0.276
TSK	0.0764	0.376	0.0058

Table1.

Cognitive measure in respect to days to discharge	**Pearson-R Correlation (*r*)**	**p-value**	**Coefficients of determination r^2**
PASS-20	-0.1423	0.275	0.0202
SER	0.3713	0.05	0.138
TSK	0.1383	0.281	0.0191

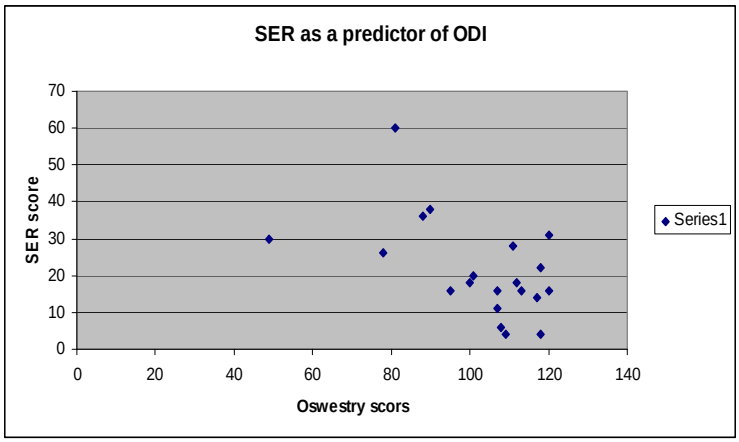
Table 2

The results can be seen in Tables 1 and 2. With moderate correlations of r = -.525 and r = .371, the SER scores showed the strongest correlation to the ODI and days to discharge of

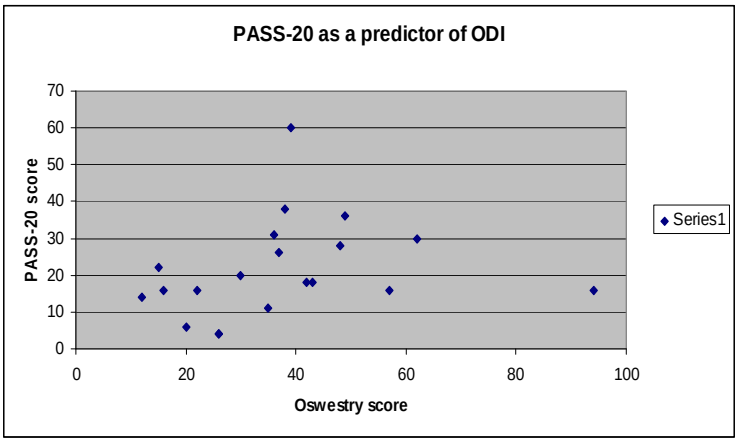
all the predictive measures. More simply put, the higher the perceived self-efficacy, the lower the subject perceived their disability upon discharge from therapy. This also suggests that the higher the patients' perceived efficacy, the longer it will take them to complete therapy, which was an unpredicted result. The SER also explained most of the variance between it and the outcomes with $r^2 = .276$ and $r^2 = .138$ respectively. This means that the SER and ODI share approximately 28% of their variance, while the SER and days to discharge share approximately 14% of their variance. Furthermore, with p-values of 0.009 and .05, the SER was the only predictive measure which was powerful enough to be significant ($p \leq 0.05$). P-values predict the odds that the given statistical analysis has happened by chance. That is, in the current study, there is only a 0.9% chance that correlation between the SER and the ODI was by random chance. It then follows that there is only a 5% chance that the correlation between the SER and days to discharge was by random chance. Thus, the SER can be used as a moderate predictor of patients' perceived disability upon discharge from therapy for LBP.

Both the PASS-20 and the TSK lacked the significance and statistical power to make any definite correlation (see tables 1 and 2). The PASS-20 was the next most significant result with a correlation of $r = 0.2347$ to the ODI scores. With a p-value of $p=0.160$ though, there is a 16% chance that the results were caused by random chance and when you consider $r^2=0.0551$, the results only explain 5% of the variance. That is, there is only a 5% chance of ending up with the same results again, given the same sample. All other correlations produced more variance and less significance. Therefore, neither the PASS-20, nor the TSK are predictive of ODI scores or days to discharge in LBP patients at the completion of physical therapy.

Graph 1

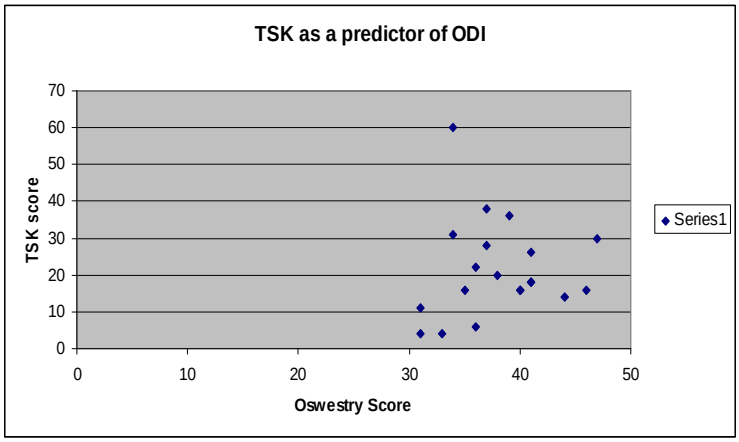


Graph 2

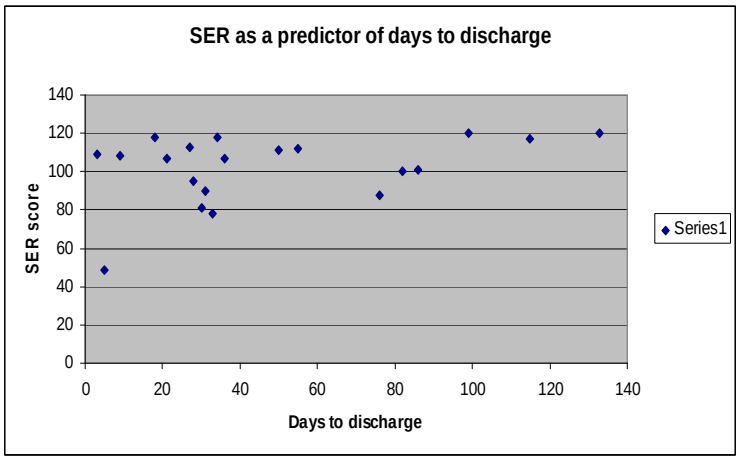


The graphs presented give a visual representation of the correlations between each outcome measure and both days to discharge and scores on the ODI. Visually, a perfect correlation would appear as a perfectly straight line running diagonally. Scatter plots lack correlations when the data points cluster, or fall in perfectly horizontal or perfectly vertical lines. Thus, it is easy to see how the results from the current study lack significance. This becomes especially true, if you throw out the one or two most outlying data points. As stated before, the positive correlation between SER and days to discharge was most unexpected. In an attempt to explain the results, the statistics were run again, this time with the exclusion of the most extreme outlier. The results changed in a rather significant manner with $r = 0.2623$, $r^2 = 0.0688$ (p=0.14). The interpretation would then change to state that there was only a low positive correlation between SER and days to discharge, with only 6.8% of the variance shared. This would mean that the SER would only predict the outcome of therapy 6.8% of the time. With a p-value of 0.14 it also means that there was a 14% chance that the results were random chance. The hypothesis would then be rejected due a lack of significance. This second analysis demonstrates the effect that anomalies have in smaller sample sizes.

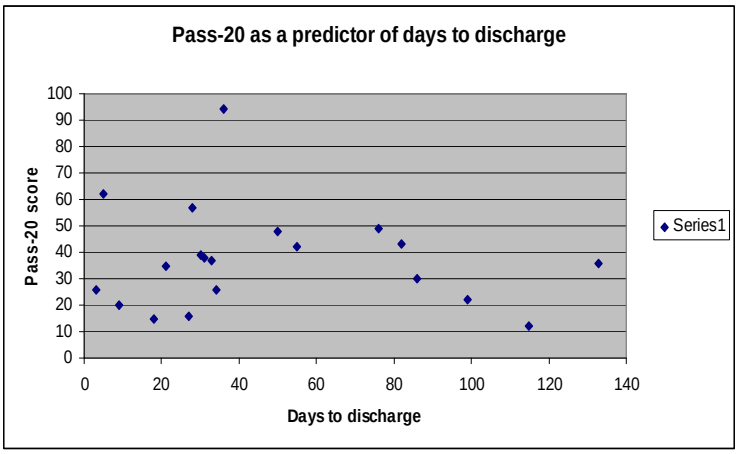
Graph 3



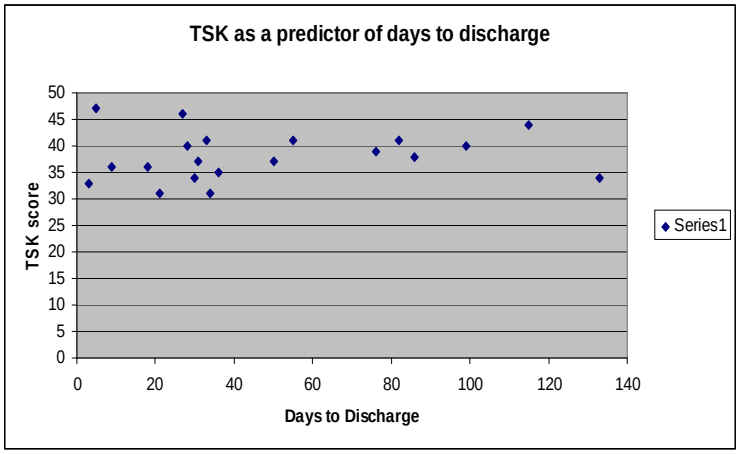
Graph 4



Graph 5



Graph 6



6. Discussion

The goal of the current study was to show that there was a correlation between the TSK, PASS-20, SER and both the ODI and days to discharge. It was hypothesized that low scores on the TSK and PASS-20 along with high scores on the SER would be predictive of a quicker recovery time and less perceived disability upon discharge from therapy for LBP. The study only found a significant correlation between the SER and the outcome measures. The current study should either support what previous research has found, or provide an alternate explanation for its results. Previous research has come to similar conclusions where self-efficacy has been the most important predictor of disability, with other cognitive factors, including pain related fear, lacking the same predictability. The suggested mechanism is that when self efficacy is high, elevated pain-related fear might not lead to increased pain inensity.[27,28,29] Other research has found that there is little to no correlation between cognitive/psychological factors, which include scores on an efficacy scale and the TSK, and a Functional Capacity Evaluation[19] Variability across factors such as sample, gender, pain duration and choice of statistical methods might affected the outcome of the TSK scores as suggested by previous research.[14] It is worth noting though, that it was the Self-efficacy expectations scale (SES) which was used in the cited study, rather than the SER, as was used in the current study. Other research regarding the use of a functional self-efficacy scale has shown to be moderately correlated with lift performance in low back pain and comparison groups.[2] This becomes important when the preferred method of evaluation for discharge from therapy was some form of FCE even though the current study does not support the results. The difference in results between the current study and the cited one gives merit to the need for further research in this area.

As another inferential explanation for the results, it could be that the supervision of a therapist caused a 'white-coat' effect. That is, the patient is pushed to perform some act that they previously wouldn't have done, because of the direct influence of the professional. The author witnessed this first hand in a therapy clinic, where clients adamantly declare that 'there is no way I can perform that exercise,' until, due to the influence of the therapist, the patient performed the task they claimed not to be able to do. It could be that the patients' level of kinesiophobia or pain anxiety didn't influence exercise or lifting capabilities as much as the instructions from the therapist.

As with all research projects, not all the extraneous variables can be controlled for, thus error is inevitable. There are a number of possible sources of error in this experiment which are worth discussing. The greatest threat to the current study is the relatively small sample size (n=20). Although 20 subjects is an adequate number to calculate the Pearson-r Correlations it is not large enough to deal well with anomalies. The current study had subjects who varied in days to discharge from 3 days to 133. These extremes can cause for shifts in means and standard deviations which aren't predictive of the rest of the population, yet are still expressed in the statistical analysis because of the small population size. Closely related to the sample size is the lack of a homogenous sample. The current study didn't have a clear enough operational definition for low back pain. Some patients were receiving care for LBP for the first time, while it was discovered after the data had been gathered that some of the patients were receiving care for a chronic problem which had treated for in the past. Other patients were receiving first time care for LBP, but were also presenting with a co-morbid condition. In more than one case, it was some post-operative procedure, including total knee or total hip arthroplasty. Changes in gait caused by arthroplasty could have

affected the back through the segmental interaction of a gross motor skill as fundamental as gait. If the back pain was a result of skewed gait, then it would be impossible to assess whether it was the normalization of the gait that affected the outcome, or the therapy for the back pain.

The subject's past experience with therapy for the co-morbid condition might have also had some effect on the measures used, especially the SER and TSK. More specifically, the SER asks, "During my rehabilitation, I believe I can do therapy that requires me to stand, therapy that require me to walk and my therapy regardless of the amount of pain I am feeling." These questions of the SER do not specifically ask about therapy related to LBP. It could have been the co-morbid condition was influencing the subjects' choice of answer. This is also the case with the TSK. Questions 10, which reads, "Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening," may also have be affected by a co-morbid condition. Again, the sample size wasn't large enough to disperse any variance which may have been caused by these factors. Lastly, some of the demographics varied within the population by a large degree. For instance, although not noted in the data section, the youngest participant receiving care for LBP was in his mid 20's, while the oldest patient was well over 80. The difference in age, overall activity level and ability to recover from injury may have added to the error present in the results. The difference in age also may also affect the subjects' outlook on pain and therapy. It was observed by the author that the older women were the ones who delayed coming to therapy for the longest. In a conversation with one such subject, it was discovered that she had been dealing with her pain for several years. Although completely subjective, it

is also worth noting that as a generalized statement, the younger subjects were receiving care for their pain within a few weeks of onset.

Other factors which could have had a role introducing error include insurance and cost factors. Most insurance have a dollar amount or limited number of visits for therapy. For example, according to the American Physical Therapy Association, the Medicare cap for therapy from 2007 to 2010 was $1810 and was just recently bumped up to $1860. These cost limits on therapy may have accounted for some of the variance in how the cognitive measures related to days to discharge. If patients weren't willing to pay out of pocket, then this factor would have affected the outcome, as they would discharge from therapy earlier. Secondly, many of the subjects participating in the study were getting very close to discharge at the end of the 2009. Deductibles were reinstated the first of the year, meaning the patients therapy charges would be coming out of pocket until that deductible was met. This also could have played a role in adding to variance in the days of discharge. It was observed by the author that many patients, in general, requested discharge near the end of the year as not to have to pay out of pocket.

7. Conclusion

In conclusion, the current study lacked the statistical power to accept the hypothesis that the TSK and PASS-20 were correlated with both the ODI and days to discharge from therapy for low back pain. Furthermore, the SER had a moderate negative correlation to perceived disability as measured by the ODI, and a moderate positive correlation to days to discharge, although the latter went against previously state research. For future studies, a more homogeneous population is critical, along with a better operational definition for LBP

and discharge evaluations. As much as possible, extraneous variables such as cost and demographics must be controlled for. That being said, cognitive factors such as kinesiophobia, pain anxiety and self efficacy must continue to be researched as to determine the most effective way to treat patients with all kinds of LBP. In light of previous research and the results from the current study, every possible factor related to the development LBP and its eventual chronicity must be explored.

Appendix A

Pain Anxiety Symptoms Scale-20

Each item is rated on a six-point Likert scale ranging from 0 (never) to 5 (always).

Please assign the appropriate number between 0 – 5 to the line provided to the right of each question.

Cognitive Factor

1. I can't think straight when in pain ____
2. During painful episodes it is difficult for me to think of anything besides the pain___
3. When I hurt I think about pain constantly___
4. I find it hard to concentrate when I hurt___
5. I worry when I am in pain___

Escape/Avoidance Factor

6. I go immediately to bed when I feel severe pain___
7. I will stop any activity as soon as I sense pain coming on___
8. As soon as pain comes on I take medication to reduce it___
9. I avoid important activities when I hurt___
10. I try to avoid activities that cause pain___

Fear Factor

11. I think that if my pain gets too severe it will never decrease___
12. When I feel pain I am afraid that something terrible will happen___
13. When I feel pain I think I might be seriously ill___
14. Pain sensations are terrifying___
15. When pain comes on strong I think that I might become paralyzed or more disabled___

Physiological Anxiety

16. I begin trembling when engaged in an activity that causes pain___
17. Pain seems to cause my heart to pound or race___
18. When I sense pain I feel dizzy or faint___
19. Pain makes me nauseous___
20. I find it difficult to calm my body down after periods of pain___

Appendix B

INSTRUCTIONS: The Self-Efficacy for Rehabilitation Outcome Scale (SER) provides 12 statements that conclude the sentence, "During my rehabilitation, I believe I can do….." Please complete this survey by choosing the most appropriate number for each statement. **This** scale is rated on an 11-point scale ranging from 0 (I cannot do it) to 10 (Certain I can do it). If you have any questions, please ask for clarification.

0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
I cannot do it										**Certain I can do it**

Self-Efficacy for Rehabilitation Outcome Scale (SER) (Back)

During my rehabilitation, I believe I can do...

1. Therapy that requires me to stretch my back _____

2. Therapy that requires me to lift my back _____

3. Therapy that requires me to bend my back _____

4. Therapy that requires me to stand _____

5. Therapy that requires me to walk _____

6. All of my therapy exercises during my rehabilitation _____

7. My therapy every day that it is scheduled _____

8. The exercises my therapists say I should do, even if I don't understand how it helps me _____

9. My therapy no matter how I feel emotionally _____

10. My therapy no matter how tired I may feel _____

11. My therapy even though I may already have other complicating illnesses _____

12. My therapy regardless of the amount of pain I am feeling _____

Appendix C

Appendix D

References

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