Bandura's Self-efficacy Theory in Asthma Compliance

by

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BANDURA'S SELF-EFFICACY THEORY IN ASTHMA COMPLIANCE

Abstract

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May 2001

Chair: Gail Synoground

Asthma is an altered immune system response that causes chronic inflammation of respiratory airways and bronchoconstriction. The diagnosis of asthma is made based on history and objectively measuring pulmonary function using spirometry. Symptoms associated with asthma include dyspnea, wheezing, mucous drainage, cough, fatigue, and recurrent chest tightness. Despite a better understanding of asthma with improved diagnosis, treatments and pharmacological advances, asthma prevalence, morbidity, and mortality have been increasing dramatically in the United States during the past 20 years. Asthma specialists suggest that focus on the behavioral factors that influence compliance to self-management of asthma could prevent deaths. Evidence from research examining applications of Bandura's theory of self-efficacy suggests that relationships exist between self-efficacy and prevention. The role of the nurse practitioner is to individualize an intervention program for clients with asthma focusing on raising self-efficacy expectations that can increase compliance. High levels of self-efficacy expectations are also associated with decreased symptoms, increased adherence to treatment, and increased self-care behaviors.
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Introduction

Asthma is an altered immune response. The response is an inflammatory condition that affects the small airways, which result in bronchospasm and increased mucous production. The diagnosis of asthma is based on history and physical findings (dyspnea, wheezing, cough, nocturnal coughing, waking up short of breath, recurrent chest tightness, allergens, and family history), or pulmonary function test measurements. Once considered a fully reversible process with periods of normalcy between exacerbation, research has shown that the airways of patients with asthma are chronically inflamed and damaged (Jonasson, Carlsen, & Mowinckel, 2000; Kelloway, Wyatt, Adlis, & DeMarco, 2000; Nayak et al., 2000). Because there is no cure for asthma, the role of the nurse practitioner is a multifaceted and an ongoing process surrounding prompt response to acute exacerbation and control of chronic symptoms to prevent respiratory limitations and demise.

Asthma prevalence is increasing dramatically in the United States during the past 20 years (Mendenhall & Tsien, 2000) with the prevalence of asthma rising 75% between 1960 and 1994 (Opperwall, 2000). Morbidity and mortality continue to increase despite medical advances in disease management (Vilar et al., 2000). Asthma is now the most common chronic disease of childhood and has become the sixth leading cause of hospital admissions in the United States (Owen, 1999). Of the 14 to 15 million people in the United States affected, about 5,000 die annually, and asthma accounts for more than 100 million days of restricted activity and 470,000 hospitalizations every year (MeGann, 1999). Asthma specialists suggest that focusing on the behavioral factors that influence compliance will prevent many of these deaths. The purpose of this paper is to identify
factors contributing to noncompliance in people who have asthma and to integrate the conceptual framework of Bandura's theory of self-efficacy to improve adherence to treatment modalities. The nurse practitioner's role is an ongoing collaborative process directed at improving compliance by utilizing Bandura's theoretical framework to raise self-efficacy.

Statement of Problem

Although therapeutic advances in asthma have been made, compliance with long-term therapy is often poor, leading to significant morbidity and mortality (Nayak et al. 2000). Weinstein and Faust (1997) identified psychological functioning as an influence in adherence patterns. In a qualitative analysis, interviewing 30 patients, half of the respondents did not believe they had asthma, felt that their condition had no effect on their lives and rarely took their reliever medication (Adams, Pill, & Jones, 1997).

Conway (1998) found that despite the fact that more medication is prescribed annually, there has been little impact on morbidity figures for the disease. Conway surveyed 52,664 patients and found a multitude of factors surrounding failure to adhere to treatment regimes. People felt that they wanted to save medications for bad attacks or thought that medications were not truly necessary (Conway, 1998). Compliance is undermined by lack of knowledge and the inability to manage complex treatment plans. Because regimens are arduous, complex and often have no immediate noticeable impact, people often stop treatments during long periods of remission (Conway, 1998).

Maintaining interest and awareness about asthma and treatments can be a difficult matter for patients with chronic diseases. Non-adherence to prescribed medication is prevalent and has been implicated in asthma exacerbation (Kelloway et al., 2000). One
hundred and twenty two patients assigned to a double blind randomized placebo controlled trial over the period of 27 months showed significant decrease in medication compliance (Jonasson et al., 2000). In this study, adherence to medication treatments was 87% after 3 months and only 44% after 27 months. Due to the chronic nature of asthma with no cure in site, compliance is a perplexing and complicated and difficult issue that nurse practitioners continually need to address.

Statement of Purpose

Bandura's theory of self-efficacy can be used to identify issues surrounding noncompliance in people with asthma and increase adherence to treatment interventions. Self-efficacy is the belief that one can actually perform the behaviors and skills that are believed to help (Hanson, 1998). Scherer and Schmieder (1996) reasoned that enhancing patients' levels of confidence is associated with increasing their perceived self-efficacy. One way to achieve behavioral changes is by increasing the patient's general and asthma-specific self-efficacy expectancies (van der Palen, Klein & Seydel, 1997).

Self-efficacy has been demonstrated to be an important component in the ability to manage asthma. High self-efficacy expectancies will result in better compliance towards self-management behaviors such as improved adherence to inhaled medications regimens. Zimmerman, Brown, and Bowman (1996) found that using a group teaching method to teach self-management skills improved self-efficacy levels.

An inner city asthma clinic used a comprehensive outpatient program to identify risk factors in asthma patients and administer treatment modalities such as home self-management, education, specialist care, and computer-based interactive programs (Vilar et al., 2000). Their random review of medical records and quality of life survey showed
superior clinical outcomes with a significant decrease in hospitalizations, emergency room visits, and asthma severity during a three year period when compared to patients who were treated by primary care or emergency room physicians.

An individualized self-management assessment and plan could reduce pediatric emergency department visits, hospitalizations, and costs related to asthma care as seen by the estimated cost savings per patient of $1,544 (Volsko, 1998). Her study followed 27 patients for 7 months prior to and 7 months after participation in an asthma clinic. Interventions consisted of three outpatient clinic visits lasting 1-1.5 hours. She used a multidisciplinary team with an education plan covering early recognition of signs and symptoms, physiologic components of an acute exacerbation, trigger recognition, and a 5-step action plan for using peak flow measurements and medication. Volsko concluded that self-efficacy was a significant factor for many health care behaviors linked to asthma and formulated that perceived self-efficacy expectancies may have a strong influence on chronically ill patients' ability to manage their own care.

Review of Literature

Theoretical Framework of Self-efficacy

Simply knowing what to do does not make people efficient in dealing with their environment. Self-efficacy is the process from person to behavior to outcome. The self-efficacy theory describes two types of expectancies that influence behavior. Outcome expectancy is the conviction that certain behaviors will lead to certain outcomes (Scherer, & Shimmel, 1996). Perceived self-efficacy is concerned with judgments of personal capability, the very beliefs about one's capabilities to produce certain actions (Bandura,
1997). Perceived self-efficacy comes from within and is the ability to organize and execute given actions.

Efficacy expectations can be measured and vary in magnitude, generality, and strength (Ootim, 2000). Magnitude refers to the difficulty of a task. More difficult the tasks have a greater magnitude. Generality refers to the extent that a domain of behavior can be generalized to other situations (Scherer, & Schmieder, 1996). Strength refers to the confidence individuals have in their ability to accomplish an activity.

Self-efficacy expectations are the connection between thought and behavior. There are four areas or sources of information that determine personal self-efficacy: enactive mastery experience, vicarious experience, verbal persuasion and physiological/affective states. Appendix A shows a diagrammatic representation of Bandura's (1997) theoretical framework of Self-efficacy.

Enactive Mastery Experiences

Enactive mastery experiences (formerly known as performance accomplishment) refer to successful mastery that results from personal experience. It is the mechanics of how things are made to happen. Performance is the most influential source of efficacy information because performance provides the most accurate evidence of whether an activity can be successfully accomplished (Bandura, 1997). In an earlier publication, Bandura (1977) identified performance exposure, desensitization, and self-instruction as factors influencing performance accomplishments. Success raises self-efficacy expectations whereas failure, especially failure that happens early on, lowers mastery expectations (Ootim, 2000).
Vicarious Experience

Many expectations come from vicarious experiences, either in the form of live modeling or symbolic modeling. Vicarious experiences influence self-efficacy by observing and comparing one's own situation to that of another. Seeing others successfully accomplish difficult activities can create beliefs in the observer that they too will be able perform similar activities if they keep trying. They persuade themselves that if others can do it, they should be able to achieve at least some improvement in performance (Ootim, 2000). Likewise, observing role models of similar capabilities enhances self-efficacy more than observing role models with higher capabilities.

Verbal Persuasion

Verbal persuasion is the influence of others' suggestions on efficacy beliefs. Suggestions can be used to convince people, through discussion, that they can perform an activity. Verbal persuasion is a technique that is most often used in a clinic visit. Verbal persuasion, when used alone has the weakest effect in convincing individuals of their own ability to perform a task yet it is most often used (Bandura, 1997).

Physiological and Affective States

Bandura (1997) describes physiological and affective states as the intensity of physical and emotional reactions and how they are perceived and interpreted. He formerly referred to this component as "emotional arousal" (Bandura, 1977, 1986) in his previous publications. Physiological and affective states can either inhibit or promote self-efficacy expectancies.

People judge their level of anxiety and vulnerability to stress by interpreting symptoms of physiological arousal such as sweating, rapid heart rate, shakiness and upset
Because high levels of aversive physiological arousal can inhibit performance, people are more likely to expect success when they control these symptoms.

Ootim (2000) found that fear reactions generate further fear of impending stressful situations through anticipatory self-arousal. Feelings of fear and other affective states such as emotions and mood can strengthen or weaken self-efficacy.

Asthma Noncompliance

A lot has been published about the issues surrounding why compliance is a problem in asthma management. One study (Cabana et al., 2000) identified 171 comments about barriers dividing them into four areas: inhaled corticosteroids, peak flow meter usage, smoking cessation, and eliminating allergen exposure. Barriers identified included awareness deficiencies, familiarity, agreement issues, self-efficacy, and outcome expectancies. Complex interventions are necessary to uncover the multitude of barriers prohibiting self-efficacy and behaviors and improving compliance.

Education

Education and the role it has on compliance and self-efficacy is diverse. Incorporating one-on-one education programs into asthma management is an effective way to improve asthma outcomes (Forshee et al., 1998). Sherer, Schmieder and Shimmel (1998) reported that education alone was effective in significantly improving self-efficacy when managing breathing difficulties, but results measured 6 months later did not show long term effects. Developing collaborative educational goals has also proven to be effective in improving compliance. Zimmerman, Bonner, Evans, and Mellins, (1999) reported that positive collaboration between a patient and a concerned physician improves self-efficacy.
Tettersell's (1993) study of 100 moderate to severe asthmatics, found the majority of patients thought they would know how to manage an attack, but when tested on their ability only 34.4% were considered safe. However, the level of patient knowledge appears to influence a patient's ability to manage an asthma attack. Tettersell also demonstrated that the level of patient knowledge had no significant effect on compliance to drug therapy.

**Self-Assessment**

Part of self-assessment involves the monitoring of physiologic cues. Many people assess the severity of their asthma by subjective signs such as dyspnea and these cannot accurately estimate airflow obstruction. The most common reason for seeking medical advice when faced with an asthmatic attack unrelieved by medication was difficulty in breathing (Byrne et al., 1993).

The use of peak flow meters is seen as an effective method for self-evaluation of airway status. Taylor, Auble, Calhoun, and Mosesso (1999) reported that less than 10% of asthmatic patients used a daily peak flow meter as a guide in determining the effectiveness of their treatment regimen or in seeking help to relieve and prevent an asthmatic attack.

A study by Cote, Cartier, Malo, Rouleau, and Boulet (1998) gave patients an electronic peak flow meter with a 3-month memory and asked them to measure morning and evening peak expiratory flow rates. They found compliance good in the first month at 63%. However, even with regular reinforcement, compliance fell to 50% at 6 months and 33% at 1 year. Recognizing that short-term compliance with peak flow meters is fairly good, perhaps peak flow meters should be limited to short periods of time. When
prescribing a peak flow meter, regular review of the results and management related to those results is an ongoing process in preventing exacerbation and the increased risk of morbidity and mortality associated with asthma attacks.

Allergens

Chronic inflammation is the result of a combination of continuous exposure to triggers and failure of the inflammation to resolve. At least 1 of every 5 people have allergies (Opperwall, 2000) and allergies trigger the disease in 90% of children and young adults with asthma (Owen, 1999). Many patients do not know some or all of their allergic triggers and therefore cannot control allergy-induced asthma symptoms. An estimated 80% of children with asthma and 40% of adults experience symptoms after exposure to allergic triggers and people affected by allergy are at least three times more likely to develop asthma (Opperwall, 2000). Reducing the inflammation reduces asthma symptoms and improves the overall course of the disease. However, even when people do know what allergens trigger their asthma symptoms, they are unable to make the needed life style changes. Taylor et al. (1999) found in their study that 40% of the asthmatic patients smoked. In another survey of 23 patients, 18 lived in an environment that wasn't free from smoke and 1/3 kept furry animals as pets (Byrne et al., 1993). Some simple examples of measures used to avoid allergic triggers are given in appendix B.

Pharmacologic Intervention

Many pharmacologic advances and publications address the issue of medication compliance. In the past, glucocorticoids were administered in fixed doses four times a day. Newer and more potent agents such as mometasone furoate have been developed and can be administered twice daily (Nayak et al. 2000). The compliance rate for all
types of inhaled asthma medications is about 50% but preventive medications such as inhaled corticosteroids is only about 40% (MeGann, 1999). Unfortunately, anti-inflammatory agents, particularly inhaled corticosteroids, are the most effective treatment for controlling persistent asthma.

Inhaled medications were evaluated in a nurse-administered self-management program addressing patient compliance. Using self-efficacy as the framework for treatment, the program consisted of six weekly education sessions and self-monitoring throughout a six-week program. Fifty-five subjects from a rural community were assigned to one of two groups in a two-group randomized, controlled experimental design. One group received usual care while the other group received self-management interventions. The study revealed increased compliance with inhaled medications in subjects that participated in the self-management program (Berg, Dunbar-Jacob, and Sereika, 1997).

Misperceptions about the actions of asthma medication may reduce compliance to pharmaceutical therapy and result in poor control (Boulet, 1998). Fears about side effects, becoming dependent on medications from chronic use or becoming dependant on inhaled corticosteroid medication decreases willingness to use pharmacotherapy. These patients are at serious risk of having a fatal asthma attack.

Efficacy Enhancing Interventions

Self-efficacy expectations promote behavioral change and arousal in a variety of areas. Lev (1997) listed the four sources that influence efficacy expectations as: actual performance accomplishments, vicarious experience, verbal persuasion, and physiological states.
Fostering Performance Accomplishment

In the case study below, the clinician made it clear not to use Serevent more than every 12 hours but did not further discuss what to do if a dose is missed.

"Two weeks ago, John Durand, 32, visited his physician's office for reevaluation of his asthma medications, since exacerbations had sent him to his local emergency department (ED) twice in one month.

Mr. Durand told his physician that he needed to use his metaproterenol inhaler more often than before and said that he'd had insomnia "for a while now." His physician decided to discontinue his theophylline (Theo-Dur) tablets and replace the Metaprel inhaler with a Serevent inhaler (salmeterol xinafoate), a long-acting adrenergic beta2-agonist bronchodilator (no more than two puffs every 12 hours) and a Ventolin (albuterol sulfate) inhaler (two puffs, as needed, for wheezing every four to six hours). The salmeterol was meant to prevent acute asthmatic episodes; albuterol, a short-acting beta2-adrenergic agonist bronchodilator, is used to treat symptoms of acute exacerbations.

The nurse demonstrated the technique for using the metered-dose inhalers and had Mr. Durand return-demonstrate until he did it correctly. She then documented "instruction completed" in Mr. Durand's chart.

Mr. Durand was doing well on his new regimen until about two weeks later, when he forgot to take his evening dose of salmeterol. In the early morning hours he woke up with difficulty breathing.
He remembered then that he'd forgotten to take his salmeterol. So he administered two puffs, but he got no relief. About 30 minutes later he took two more puffs. Still getting no relief, he grew anxious and began searching for the albuterol, which he hadn't needed in weeks. He took two puffs within an hour of the second dose of salmeterol. This finally produced relief.

But during the next two hours, Mr. Durand experienced a rapid heart rate and extreme nervousness, which brought on more dyspnea. He finally drove himself to the ED. After six hours of supportive care and cardiac monitoring, his heart rate and dyspnea subsided. When asked why he's taken so much salmeterol, he said that he was trying to "make up" the missed dose (Lilley & Guanci, 1996).

In this case study, Mr. Durand did not know what to do about a dose he missed. Failed attempts at self-management of medications can undermine Mr. Durand's perception of self-efficacy. There are numerous tools that can be used to break down goals into more easily managed tasks that will facilitate success.

Appendix C demonstrates a step by step algorithm for a comprehensive approach to asthma self-management. Using the asthma decision tree, Mr. Durand would benefit from setting goals to improve asthma maintenance behaviors. Monitoring symptoms such as difficulty breathing and insomnia could help him identify problems and appropriate solutions to those problems. Mr. Durand did not have an action plan available to him to produce favorable outcomes. Learning about his medication's onset, duration, and action would prevent medication misuse and subsequent hospitalizations.
Evaluation of Mr. Durand's plan of action could then result in fewer symptomatic episodes and a decrease in the number of hospitalizations.

Furthermore the asthma action plan as noted in appendix D focuses on peak flow measurement to objectively monitor symptoms. Mr. Durand would benefit from using a peak flow meter to identify his symptoms earlier. With the asthma action plan tool, the nurse practitioner can provide written individualized instruction for asthma management. Arranging conditions to facilitate effective performance will help patients face difficult and changing problems and successfully perform complex activities, improving perceptions about self-efficacy expectations.

Providing Vicarious Experiences

Role models who have successfully managed the disease can improve efficacy expectations and performance in those who struggle with asthma. Observing other people's behavior enhances expectations of mastery (Scherer & Schmieder, 1996). Thus observing others with similar problems successfully perform a given activity such as peak flow meter monitoring helps to enhance participants' expectations about their own mastery of the task. Scherer and Shimmel (1996) listed videos, peer groups, tapes, books, and pamphlets as other examples of symbolic modeling.

Using Verbal Persuasion

People are led to believe through suggestions and discussion, that they can successfully perform activities necessary to manage asthma. Persuasion, exhortation, interpretive treatments and self-instruction influence verbal persuasion (Lev, 1997). However, difficult tasks such as the use of a peak flow meter, how to use an inhaler or what to do when an exacerbation arises are addressed best if verbal persuasion is used in
conjunction with performance accomplishment. Alone, verbal persuasion works best in the form of praise and encouragement, not only for accomplishing a goal but also for their efforts even if they were not completely successful (Scherer, Schmieder, & Shimmel, 1998).

Addressing Physiological and Affective States

Asthma contributes many factors to negative physiological and affective states inhibiting self-efficacy. Asthma exacerbation often leads to elevated levels of fear, stress, and anxiety. Teaching control of emotional and physical arousal states such as anxiety and its associated symptoms can positively impact self-efficacy expectations (Scherer & Schmieder, 1997). Patients can learn control through stress management techniques, relaxation, visual imagery, and symbolic desensitization.

Counseling and group therapy can help with other affective states such as frustration, failure, anger, and hopelessness associated with the chronic nature of asthma. Depression brought on by chronic fatigue may also need to be addressed using pharmacological therapy.

Counseling can also help with acceptance of the disease. Using inductive qualitative research methods, Adams et al., (1997) interviewed 30 patients and found that 15 of the 30 patients did not accept the diagnosis of asthma, believed their condition had no effect on their lives and rarely took their reliever medication. Conway (1998) found that feelings of shame and embarrassment when using inhalers or worry about side effects were major contributors to medication noncompliance. One patient expressed acceptance of asthma like this:
"While asthma can knock you down one day, there is the capacity for you to bounce back strong the next day. So, what's the key to making sure you're up more than you're down? I think it's respect for the disease. If you are educated about the illness, and follow your medication program, you can maximize your control....Asthma doesn't have to rule all the aspects of your life" (Owen, 1999).

Medications such as B2-agonists and methylxanthines mimic symptoms of anxiety because their side effects include gastric upset, nervousness, and restlessness (Owen, 1999). Because people rely on physical feedback to judge their capabilities, recognizing the source of physiological symptoms may help change a patient's perception of their own self-efficacy.

Conclusion

Asthma is a clinical disorder that causes the airways of patients to be chronically inflamed and damaged. It is associated with periods of perceived normalcy and periods of exacerbation causing acute respiratory distress and compromise. Asthma interventions are complex and multifaceted, directed at both immediate and long term benefits with no cure available.

There is a better understanding of asthma with improved diagnosis, treatment and pharmacological advances (Homer, 1997). However asthma continues to be on the rise and many of the deaths related to asthma can be prevented with improved attitudes, behaviors and compliance to therapeutic regimens (Schott-Bear & Christensen, 1999).

Interest and awareness about asthma is easier to maintain when viewing asthma management as a journey, a collaborative process with both patient and nurse practitioner
committing and mutually agreeing to behavioral changes to promote health. Nurse practitioners can be influential in designing asthma programs to increase self-efficacy expectations by incorporating methods such as performance accomplishment, vicarious experiences, verbal persuasion and emotional arousal (Wieker, 1999). High self-efficacy expectancies can produce behavioral changes. With a strong sense of self-efficacy, patients can master difficult challenges and sustain them over time.

Suggestions for Future Study

Adams et al. (1997) suggest that little has been published on asthma when compared to the number of people suffering from this chronic condition and the amount of medication regularly prescribed. Though there are many studies about asthma and the issues surrounding noncompliance (Boulet, 1998; Conway, 1998; Taylor et al., 1999; Vilar et al. 2000), little is known about the influence self-efficacy has on adherence to treatment plans for asthma (Berg et al., 1997). Thus more research linking self-efficacy expectations to compliance should be investigated. There is also a need for further research on self-efficacy as it impacts long term adherence to treatment regimens in people with chronic asthma.
Appendix A
Bandura's Theoretical Framework of Self-efficacy

SELF-EFFICACY THEORY

PERSON \(\rightarrow\) BEHAVIOR \(\rightarrow\) OUTCOME

- Enactive Mastery Experiences
- Vicarious Experience

Magnitude

Strength \(\rightarrow\) EFFICACY EXPECTATIONS \(\leftarrow\) OUTCOME EXPECTATIONS

Generality

Verbal Persuasion \(\rightarrow\) Physiological and Affective States

Bandura, 1997
# Sample Avoidance Measures for Allergic Triggers

| Furry animals (dander, saliva, urine) | Remove animal from bedroom and home if possible  
|                                      | Dry clean upholstery and carpets |
| Dust mites (live in “fluff”)         | Encase bedding in mite-proof covers  
|                                      | Maintain indoor humidity at less than 50%  
|                                      | Remove bedroom carpets  
|                                      | Filter furnace vents  
|                                      | Reduce dust and dust-collecting décor |
| Cockroaches (exoskeleton)            | Professional extermination  
|                                      | Prevent access to food supply |
| Pollens                              | Stay inside during season  
|                                      | Air conditioner in bedroom  
|                                      | Avoid lawn-mowing  
|                                      | Time activities for lower pollen counts:  
|                                      | High efficiency air filters. |
| Molds                                | Eliminate damp, leaky areas  
|                                      | Clean moldy surfaces  
|                                      | Indoor humidity less than 50%  
|                                      | Avoid houseplants  
|                                      | Keep air filters clean  
|                                      | Avoid chores that involve damp leaves, etc. |

Opperwall, 2000
Appendix C
Asthma Self Management Behavioral Framework

Self-regulation behaviors

GOAL SETTING

MONITORING

• Symptoms
• Environment (include. activity)
• Asthma Maintenance Behaviors

PROBLEM I.D.

SOLUTION I.D.

ACTION

• Medications
• Triggers
• Help
• Other

• Change Meds
• Avoid Trigger
• Remove Trigger
• Call Health Professional

EVALUATION

• Symptoms
• Environment (include. activity)

Bartholomew et al., 2000
# Asthma Action Plan

## Asthma Action Plan

**Name:**

**Date:**

<table>
<thead>
<tr>
<th>Zone</th>
<th>Description</th>
<th>Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Green Zone</strong></td>
<td>80 - 100% of your personal best</td>
<td></td>
</tr>
<tr>
<td><strong>Yellow Zone</strong></td>
<td>50 to less than 80% of your personal best</td>
<td></td>
</tr>
<tr>
<td><strong>Red Zone</strong></td>
<td>50% or less of your personal best</td>
<td></td>
</tr>
</tbody>
</table>

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*Volsko, 1998*
References


functioning of the child and family. *Annals of Allergy, Asthma, & Immunology, 80*(4), 352-356.

