INTRODUCTION
Horticulture is a branch of agriculture which mainly deals with reproduction of plant life. Work system and tasks of horticulture involves Soil preparation, Seeding production, Planting, Crop Handling, Harvesting, and Post-Harvesting. It fully involves the management and cultivation of gardens and lands. These cultivation and management of gardening involves repetitive movements which affects the whole upper limb. Types of accidents in horticultural services leads to serious sprains and strains such as;

1) During Lifting, Pulling, and Pushing (Overexertion) causes 65.0% of accident.
2) Slips, Trips and Falling type of activities causes 17.0% of accident.
3) Others may causes 18% of accident.

Meyers et all (1995) stated that the muscles, joints, tendons, nerves and related soft tissues are affected by occupational musculoskeletal disorders. The upper extremities including neck and shoulders, and the lower back are most commonly affected regions. The inflammation and injuries are more prone to affect the workers due to repeated exposure of same muscle, tendon, or other region. The injuries such as repetitive motion injury, repetitive strain injury, cumulative trauma disorder and occupational overuse syndrome are the most common conditions.

Working in horticulture is tough and physical, and it is usual to feel tired at the end of the day. But ordinary aches and pain usually disappear after a good night rest, while ongoing discomfort and pain can develop into an injury, and that can become a serious long term problem.

EXCLUSION CRITERIA of this Study as follows: Total 18 subjects with minimum 5 years experience, Age of 25-40 years both men and women, Visual Analogue Scale Score 3-6 was included, Subjects presented with any of one positive shoulder Impingement test (Neer, Hawkins-Kennedy test). Pain with one or more resisted glenohumeral joint motion (Flexion, Abduction, External Rotation or Internal Rotation).

EXCLUSION CRITERIA of this Study as follows: Past history of any rotator cuff surgeries, History of glenohumeral dislocation, or other injuries to the shoulder, Shoulder pain due to cervical pathology.

MATERIALS USED: Dumbbells, Exercise Mat, Chair, Stick Towel, Paper, Pen and Pencils

PROCEDURE
All the subjects were selected according to the inclusion and exclusion criteria. Further they were explained about the purpose and procedure of this study in their local language and an informed consent was obtained from all the subjects. All the
Data analysis was done by using IBM SPSS STATISTICS 20.

### Table 1: Pre- and Post-Test Value of Visual Analogue Scale (VAS)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Test</th>
<th>Mean</th>
<th>S.D</th>
<th>Variables</th>
<th>T-Test</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pre-test</td>
<td>4.44</td>
<td>0.98</td>
<td>1.96</td>
<td>4.43</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Post-test</td>
<td>1.61</td>
<td>0.84</td>
<td>1.69</td>
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<td></td>
</tr>
</tbody>
</table>

P<0.05

### Table 2: Pre- and Post-Test Value of Shoulder Pain and Disability Index - Pain Score

<table>
<thead>
<tr>
<th>S. no</th>
<th>Test</th>
<th>Mean</th>
<th>S.D</th>
<th>Variables</th>
<th>T-Test</th>
<th>Significance</th>
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<tbody>
<tr>
<td>1</td>
<td>Pre-test</td>
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<td>10.01</td>
<td>20.03</td>
<td>11.17</td>
<td>0.0001</td>
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<tr>
<td>2</td>
<td>Post-test</td>
<td>20.88</td>
<td>7.23</td>
<td>14.46</td>
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</tr>
</tbody>
</table>

P<0.05

From the table 1, the descriptive statistics such as mean and standard deviation of mean for the pre-test and post-test was calculated. It is found that the mean pre-test value of 4.44 has been reduced to the post test value of 1.61. It also shows a statistically significant (p<0.0001) reduction in pain between the pre and post test values of Visual Analogue Scale (VAS).

### Table 3: Pre- and Post-Test Value of Shoulder Pain and Disability Index - Disability Score

<table>
<thead>
<tr>
<th>S. no</th>
<th>Test</th>
<th>Mean</th>
<th>S.D</th>
<th>Variables</th>
<th>T-test</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pre-test</td>
<td>25.76</td>
<td>6.06</td>
<td>12.13</td>
<td>8.34</td>
<td>0.0001</td>
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<tr>
<td>2</td>
<td>Post-test</td>
<td>12.43</td>
<td>5.41</td>
<td>10.85</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

P<0.05

From the table 2, the descriptive statistics such as mean and standard deviation of mean for the pre-test and post-test was calculated. It is found that the mean pre-test value of 42.77 has been reduced to the post test value of 20.88. It also shows a statistically significant (p<0.0001) reduction in pain between the pre and post test values of Shoulder Pain and Disability Index (SPADI) – Pain Score.

From the table 3, the descriptive statistics such as mean and standard deviation of mean for the pre-test and post-test was calculated. It is found that the mean pre-test value of 25.76 has been reduced to the post test value of 12.43. It also shows a statistically significant (p<0.0001) reduction in disability between the pre and post test values of Shoulder Pain and Disability Index (SPADI) – Disability Score.
RESULTS

From the table 1, the descriptive statistics such as mean and standard deviation of mean for the pre-test and post-test was calculated. It is found that the mean pre-test value of 4.44 has been reduced to the post test value of 1.61. It also shows a statistically significant (p=0.0001) reduction in pain and disability between the pre and post test values of Shoulder Pain and Disability Index (SPADI) – Total Score.

From the table 2, the descriptive statistics such as mean and standard deviation of mean for the pre-test and post-test was calculated. It is found that the mean pre-test value of 20.88 has been reduced to the post test value of 8.88. It also shows a statistically significant (p=0.0001) reduction in pain and post test values of Shoulder Pain and Disability Index (SPADI) – Pain Score. From the table 3, the descriptive statistics such as mean and standard deviation of mean for the pre-test and post-test. It is found that the mean pre-test value of 25.76 has been reduced to the post test value of 12.43. It also shows a statistically significant (p=0.0001) reduction in pain and disability between the pre and post test values of Shoulder Pain and Disability Index (SPADI) – Disability Score. From the table 4, the descriptive statistics such as mean and standard deviation of mean for the pre-test and post-test. It is found that the mean pre-test value of 32.21 has been reduced to the post test value of 15.46. It also shows a statistically significant (p=0.0001) reduction in pain and disability between the pre and post test values of Shoulder Pain and Disability Index (SPADI) – Total Score.

DISCUSSION

The results of this study support the idea that there is an improvement in shoulder function and reduction in shoulder pain after giving an home exercise interventions to the horticulture workers. Although such conditions like shoulder tendonitis and impingement symptoms were treated with exercise programs as a conservative treatment, and the effectiveness of home exercises on shoulder pain and shoulder function was assessed by few randomized controlled studies, 10,11,12,13 none of the studies have targeted on home exercise for shoulder pain and functional status in horticulture workers.

In this study, 20 subjects participated in the home exercise programme. Two subjects were dropped out from follow up. One subject withdrew due to some health issues and another subject was not able to continue the follow up due to some personal reason. 18 subjects completed exercise log at the time of follow up.

18 subjects were assessed for shoulder pain on both sides and the maximum pain side was taken for visual analogue scale (VAS) and shoulder pain and disability index (SPADI). Mostly the subjects had complaints with maximum pain on the dominant side. The exercise protocol was given for both side of the shoulder. At the end of the follow up the subjects were analyzed and they showed a significant improvement in shoulder function and reduction in shoulder pain followed by the home exercise protocol.

This study shows the Visual analogue scale (VAS) score and Shoulder pain and disability index (SPADI) score is reduced in the post test when compared to the pre test and the p value shows it is statistically significant (p=0.0001)

Brox and colleagues, showed that the exercise interventions are given under supervision in twice a week with a physiotherapist and the other days home exercises was given to the subjects. The duration of the treatment was 3-6 months and the exercise progressed from relaxed repetitive movements to strengthening exercises. 12,13

Stretching and strengthening programs were used in shoulder pain as a conservative treatment, which aims to reduce shoulder symptoms and alter the abnormal muscle activity and also alters the identified movements. 11 Serratus anterior muscle weakness is extremely common to a range of painful shoulder conditions on examination the patient experience pain in the neck while lifting and carrying. The serratus muscle activity is reduced in impingement subjects. 14

In impingement subjects the upper trapezius muscle activity is more active, it causes abnormal superior translation and reduction in scapular rotation. Therefore, exercise programs for upper trapezius was given in this study it may attempt to reduce the activity of upper trapezius during elevation of humerus. Additionally, two stretches was given. The normal scapular movement was limited by tightness of pectoralis muscle, hence the pectoralis minor muscle was stretched. Posterior capsule was also stretched, it helps for normal posterior translation of humeral head and during elevation of arm it prevents the excessive anterior translation of humeral head. 1

The rotator cuff muscles having a critical functional role, mainly teres minor and infraspinatus. So that, the rotator cuff exercises are included in the impingement treatment program. 14

Reddy et al took a comparison in subjects with shoulder impingement and normal subjects and compared the muscle activity of the rotator cuff and middle deltoid during scapular plane abduction. The comparison shows that the impingement group having decreased activities in the deltoid and rotator cuff muscles. This was mostly seen in early arcs of motion. It shows decreased...
activity during 30 to 60 degree arc. The infraspinatus was only shows a decreased activity during 60 to 90 degree arc. In 90 to 120 degree arc shows none of comparisons.

Ginn et al compared a control group and intervention group. That study showed the intervention group improved significantly in shoulder function compared to control group. The intervention period was one duration. Each subject were treated with shoulder stretching and strengthening exercises, and ‘motor retraining aimed at restoring scapulohumeral rhythm’.17

Greg Cooper, D.C et al recommended that the codman exercises are effective to relax the muscles of shoulder, relieves pain and increases the range of motion in the shoulder joint.18

P M Ludewig and J D Borstad et al result suggest that the intervention group showed significantly greater improvement in shoulder rating questionnaire(SRQ) score and shoulder satisfaction score than the control groups. Intervention subjects also reported significantly greater reduction in pain and disability than control group it concludes that a home exercise programme can be effective in reducing symptoms and improving function in construction workers with shoulder pain.19,20

CONCLUSION
Home exercise program for shoulder showed a significant improvement in shoulder function and reduction in shoulder pain and disability in horticulture workers with routine exposure to repetitive shoulder activities.

LIMITATIONS: Smaller sample size, There is a limited study about the horticulture workers No long term follow up has been studied.

RECOMMENDATIONS: A comparative study can be done between the outcome of both male and female horticultural workers. A similar study can be done with larger sample size. A comparative study can be done between the intervention group and the control group

REFERENCES