OVERVIEW OF TODAY’S LECTURE:
- Syllabus Overview
- Course Intro
- Symptom Surveys

Syllabus Overview:
(Refer to additional handouts)

Course Description:
- In this course you will learn how to diagnose and treat non-strabismic binocular disorders, accommodative disorders, and refractive amblyopia. More specifically you will learn:
  - How to approach a binocular vision (BV) exam
  - How to integrate clinical diagnostic data
  - How to determine the final diagnosis
  - How to determine appropriate treatment options
  - How to implement appropriate treatment options

Course Objectives:
Upon completion of this course you should be able to:
- Obtain an appropriate pediatric and/or binocular vision related case history.
- Know the symptoms and signs of specific non-strabismic binocular vision disorders.
- Calculate & interpret AC/A & CA/C ratios.
- Perform thorough non-strabismic binocular vision, accommodation, and amblyopia evaluations.
- Identify and diagnose the various binocular vision and accommodative disorders based on patient symptoms, case history, and exam data analysis.
- Assess the prognosis for the treatment of binocular vision, accommodative, and amblyopia disorders based on case history, exam data, diagnosis, and patient motivation.
- Formulate & implement a specific, goal oriented treatment plan.
- Understand the sequencing of vision therapy and be able to modify therapies as needed in order to increase or decrease difficulty level as the patient’s treatment progresses.
Course Intro:
Before treatment can ever begin you must consider the following questions:
1. What is the patient’s problem?
2. What is required for proper diagnosis?
3. What is the best possible treatment outcome?
4. What is the prognosis for the desired outcome?
5. What tools can be used to achieve the desired outcome / what can be used to treat the BV/Accommodative problem?
6. When is no treatment an appropriate option?

Details:
1. What is the patient’s problem?
   - You must have a diagnosis before you can ever consider treatment.
   - Thus, you need a good case history and diagnostic evaluation which will be discussed in the next few lectures.

2. What is required for proper diagnosis?
   - Thorough patient case history.
   - Thorough diagnostic evaluation.
   - Proper integration and interpretation of the diagnostic data.

3. What is the best possible treatment outcome?
   - PHORIA: single, clear, comfortable, efficient binocular vision.
   - AMBLYOPIA: central fixation, normal accommodation, normal acuity.

4. What is the prognosis?
   - Prognosis varies with the diagnosis; however, generally the conditions discussed this semester have a good prognosis.
   - Patient/parent motivation is an important factor when considering prognosis.
   - You must have an idea about the prognosis before recommending a specific treatment option.
   - We’ll discuss prognosis formulation in more detail later in the semester.

5. What tools can be used in the treatment of non-strabismic binocular vision disorders, accommodative disorders, and/or amblyopia?
   - Correction of refractive error
   - Added lenses
   - Prism
   - Occlusion
   - Vision therapy
   - Pharmacological treatments
   - Surgery
   - Referral
   - No treatment, reassurance, and monitoring
All of the above treatment options are additive and NOT mutually exclusive.
We’ll discuss each of the treatment options in detail in future lectures.

6. When is NO treatment an option?

- Most often reserved for:
  1. Patients without symptoms and without motivation to do any treatment. An example might be a presbyopic patient with convergence insufficiency who does not have any symptoms of a BV problem.
  2. Patients with a poor prognosis.
  3. Patients with poor, or no motivation, regardless of symptoms and/or prognosis.

- This option is NOT based on a lack of knowledge or interest on the part of the examining doctor. It is based on professional decisions based on the patient’s diagnosis, prognosis, motivation, and goals.

**Patient Symptom Surveys**

1. COVD (College of Vision Development) Quality of Life Checklist
   - This is a Vision Symptom Survey used to help identify patients with potential binocular and/or accommodative disorders.
   - Original version has 30 items with scores ranging from 0 – 120.
     - Total scores over 25 → suspected BV dysfunction
   - Newer version has 19 items with scores ranging from 0 – 76.
     - Total scores over 20 → suspected BV dysfunction
   - The survey can be repeated during and/or after treatment in order to ensure that patient symptoms are improving/resolving.

2. Convergence Insufficiency Symptom Survey (CISS)
   - Also known as the CISS-V15 survey. Scores range from 0 – 60.
   - For ages 9-17 years:
     - Scores of ≥ 16 have been found to differentiate patients with symptomatic CI from those with normal BV.
   - For ages ≥ 18 years:
     - Scores of ≥ 21 have been found to differentiate patients with symptomatic CI from those with normal BV.
   - The survey can be repeated during and/or after treatment in order to ensure that patient symptoms are improving/resolving.
Patient Case Scenario
- 28 year old male, Professional soccer player
- CC: Concussion 2 months prior with continued visual & vestibular symptoms including difficulty tracking the ball, trouble with near asthenopia, and photophobia
- “Feeling off and out of balance” since concussion
- “How long until I can get back to practice and games?”
- “Why would my neurologist say I should consider retiring?”

Additional History:
- Took header to right temple in practice
- Felt “dizzy & out of it” afterward, continued with practice
- C/O: intermittent blur, trouble focusing, trouble tracking, and photophobia x 2 months
- Will be starting vestibular therapy soon
- (+) Phonophobia
- When they try to do some light training the patient’s symptoms increase later in the day
- Prior concussion in 2003, but “fully healed from it”
- No prior ocular or visual deficits in past

Initial Evaluation Summary
DVAsc: 20/10 OD, OS  NVAsc: 20/12.5 OD, OS
EOM: FROM OU       (+) end gaze nystagmus
NPC x 3: 7cm with effort Mild head shaking/tremor during NPC
DCTsc: orthophoria  NCTsc: 14pd XP
Stereo: 250°G/25°L  Prism Bar Vergence @ N: BO: x/20/10
                  Significant effort, scrunching forehead
MEMsc:  +0.75D OD, OS Accom Facility +/- 2.00: 9 cycles/min with effort
                  (+) more difficult
Pursuits adequate  Saccades inaccurate
Retinoscopy: plano OU
Filter Eval: 550nm (I/O)
CVF/AVF: normal OD, OS
Pupils: normal OU
OH: normal OD, OS

Initial Assessment & Plan
1. Photophobia indoors/outdoors secondary to concussion
   Prescribe selective wavelength filter CLs

2. Difficulty with saccadic accuracy and end gaze nystagmus OU secondary to concussion
   Rx: HTS pursuit & saccadic therapy; 3 min each 2x/day
   At practice and games while on sidelines and in stands track ball in real time
3. Asthenopia secondary to convergence insufficiency (CI)
   CI decompensated secondary to concussion
   Rx: HTS therapy: Vergence BO, Autoslide vergence, Jump ductions; 5 min each, 2x/day

4. The eye movement deficits and CI may be contributing to the patient’s dizziness; however, likely otolith mislocation causing most of vestibular symptoms

5. All findings and recommendations conveyed to patient and his team trainer.
   Summary report sent to team physician
   Summary sent to vestibular therapist

Summary of Follow-up Visits
10 day FU
- Pt is diligent with VT; Pt becoming aware of kinesthetic feeling of convergence/divergence
- Ranges are improving but still significant effort
- Continue HTS therapies
- Add free-space fusion: Trombone, Near-far jumps, Pull-a parts (smooth), 15 min/day

3 weeks later
- Reduced VT time a bit but symptoms much better
- Tracking much better
- Photophobia stable
- NPC x 5: TTN, easy
- DCT: Ortho; NCT: 12 XP
- Stereo: 250"G/20"L
- BO @ N: >45pd
- Continue HTS saccadic VT
- Continue eccentric circles: Near-far jumps; pull aparts

1 month later
- Loves his filter CLs!!!
- Asthenopia resolved
- Was still doing VT
- Vestibular therapy continues
- Started Return to Play (RTP) protocol: Light running, goal kicking
- Findings are stable
- Pt discharged from VT
- Returned to game play 6.5 months after concussive event
COVID Quality of Life Checklist

Original Version has 30 items
Score range 0 - 120

Newer Version has 19 items
Score range 0 - 76

Can repeat during & after treatment

Total scores over 25 suspect BV dysfunction

Total scores over 20 suspect BV dysfunction

Vision Symptom Survey
Convergence Insufficiency Symptom Survey

CISS-V15
Score range 0 - 60
For ages 9-17 years:
Scores ≥ 16 found to differentiate patients with symptomatic CI from those with normal BV

For ages ≥ 18 years:
Scores ≥ 21 found to differentiate patients with symptomatic CI from those with normal BV

Can repeat during and/or after treatment
Vision Symptom Survey (COVD)

Name: ____________________________ Date: ____________

Place a check in the column that best represents the occurrence of each listed symptom.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Never</th>
<th>Seldom</th>
<th>Occasionally</th>
<th>Frequently</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blur when looking at near</td>
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<td>Double vision</td>
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<td>Burning, stinging, watery eyes</td>
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<td>Headaches with near work</td>
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<tr>
<td>Words run together when reading</td>
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<tr>
<td>Fall asleep while reading</td>
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<td>Vision worse at the end of the day</td>
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<td>Skip/repeat lines while reading</td>
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<td>Dizzy/nausea with near work</td>
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<td>Head tilt/close one eye when reading</td>
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<td>Difficulty copying from board</td>
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<tr>
<td>Avoid near work/reading</td>
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<td>Omit small words when reading</td>
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<tr>
<td>Write up/down hill</td>
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<tr>
<td>Misalign digits/columns of numbers</td>
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<tr>
<td>Reading comprehension declines over time</td>
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<td>Poor/inconsistent performance in sports</td>
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<tr>
<td>Hold reading material too close</td>
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<td>Short attention span</td>
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<td>Difficulty completing assignments on time</td>
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<td>Say “I can’t” before trying</td>
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<tr>
<td>Avoid sports/games</td>
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<td>Difficulty with hand tools (scissors, calculator, keys, etc)</td>
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<tr>
<td>Do not judge distances accurately</td>
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<td>Clumsy, knocks things over on desk/table</td>
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<tr>
<td>Difficulty with time management</td>
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<td>Difficulty with money concepts and making change</td>
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<td>Lose papers, objects, belongings</td>
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<td>Car/motion sickness</td>
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<td>Forgetful/poor memory</td>
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**TOTALS**

<table>
<thead>
<tr>
<th></th>
<th>x0</th>
<th>x1</th>
<th>x2</th>
<th>x3</th>
<th>x4</th>
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<tbody>
<tr>
<td><strong>Overall Total</strong> = sum of each column total</td>
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</tbody>
</table>

Form from COVD Quality of Life Checklist (Optometry, vol 73, No 8, August 2002).
## Convergence Insufficiency Symptom Survey-V15 (CISS)

**Name:** ____________________________  
**Date:** ____________

<table>
<thead>
<tr>
<th>Question</th>
<th>Never</th>
<th>Infrequently</th>
<th>Sometimes</th>
<th>Fairly Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do your eyes feel tired when reading or doing near work?</td>
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<tr>
<td>Do your eyes feel uncomfortable when reading or doing close work?</td>
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<tr>
<td>Do you have headaches when reading or doing close work?</td>
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<tr>
<td>Do you feel sleepy when reading or doing close work?</td>
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<tr>
<td>Do you lose concentration when reading or doing close work?</td>
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<tr>
<td>Do you have trouble remembering what you have read?</td>
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<tr>
<td>Do you have double vision when reading or doing close work?</td>
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<tr>
<td>Do you see the words move, jump, swim or appear to float on the page when reading or doing close work?</td>
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<tr>
<td>Do you feel like you read slowly?</td>
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<tr>
<td>Do your eyes ever hurt when reading or doing close work?</td>
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<tr>
<td>Do your eyes ever feel sore when reading or doing close work?</td>
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<tr>
<td>Do you feel a “pulling” feeling around your eyes when reading or doing close work?</td>
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<tr>
<td>Do you notice the words blurring or coming in and out of focus when reading or doing close work?</td>
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<tr>
<td>Do you lose your place while reading or doing close work?</td>
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<tr>
<td>Do you have to re-read the same line of words when reading?</td>
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</tbody>
</table>

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<table>
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<td>x2</td>
<td>x3</td>
<td>x4</td>
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</tbody>
</table>

**Overall Total = sum of each column total = ________________**

From Arch Ophthalmol/Vol 123, Jan 2005