Human Sexual Anatomy and Physiology

Instructor Manual

Editors: Dr. Regan A. R. Gurung and Dr. Aaron Richmond
Contributing Authors: Dawn Albertson, Bethany Fleck, Travis Heath, Phil Kreniske, Linda Lockwood, Kristy Lyons, Aliza Panjwani, Janet Peters, Kasey Powers, Amanda Richmond, Anna Ropp, Jeremy Sawyer, Raechel Soicher, Sunda Friedman TeBockhorst, Courtney Rocheleau

Human sexual anatomy and physiology appears to be a topic that is more biological than psychological. This module introduces the idea that many aspects of sexual anatomy are related to psychological topics such as identity, intimacy, pleasure, and well-being. This module focuses especially on anatomy, the sexual response cycle, pregnancy, and sexual dysfunctions.

Learning Objectives

- Relevant APA Learning Objectives (Version 2.0)
    - Describe key concepts, principles, and overarching themes in psychology (1.1)
    - Develop a working knowledge of psychology's content domains (1.2)
    - Use scientific reasoning to interpret psychological phenomena (2.1)
    - Demonstrate psychology information literacy (2.2)
    - Adopt values that build community at local, national, and global levels (3.3)
    - Interact effectively with others (4.3)
    - Exhibit self-efficacy and self-regulation (5.2)

- Content Specific Learning Objectives
    - Explain why people are curious about their own sexual anatomies and physiologies.
    - List the sexual organs of the female and male.

- Describe the sexual response cycle.
- Distinguish between pleasure and reproduction as motives behind sexuality.
- Compare the central nervous system motivating sexual behaviors to the autonomic nervous system motivating sexual behaviors.
- Discuss the relationship between pregnancy and birth control.
- Analyze how sexually transmitted infections are associated with sexual behaviors.
- Understand the effects of sexual dysfunctions and their treatments on sexual behaviors.

Abstract

It's natural to be curious about anatomy and physiology. Being knowledgeable about anatomy and physiology increases our potential for pleasure, physical and psychological health, and life satisfaction. Beyond personal curiosity, thoughtful discussions about anatomy and physiology with sexual partners reduces the potential for miscommunication, unintended pregnancies, sexually transmitted infections, and sexual dysfunctions. Lastly, and most importantly, an appreciation of both the biological and psychological motivating forces behind sexual curiosity, desire, and the capacities of our brains can enhance the health of relationships.

Class Design Recommendations

- Warm-Up Activity: Why is anatomy and physiology being taught in a psychology course?
- The Study of Sex: Masters & Johnson
- Sex vs Reproduction
- Understanding sexual anatomy
  - Female anatomy
  - Male anatomy
  - The Brain and Sex

- The consequences of sex
- Sexual dysfunctions and their treatments
- Conclusion

- Wrap up: One minute paper: The Muddiest Point

Module Outline

This module can be seen as being divided into four parts.

Introduction. There is, of course, an introductory section intended to encourage readers to reflect on their own knowledge of sexual anatomy and function. This section makes the case that because sex (and, by extension, sexual anatomy) is a taboo topic it can be difficult to get accurate information. As a result, many people acquire their knowledge through informal discussions, persistent folk wisdom, and personal experience. A second point raised in the introduction is the question of whether sex is primarily a behavior aimed a reproduction or one with the goal of pleasure. The authors suggest that a large portion of sexual behavior is centered around a variety of physical and psychological pleasures, and that only a small portion is undertaken with the explicit goal of reproduction. This introduction is also an opportunity to emphasize that this class session is about the scientific (rather than moral, political or religious) approach to sex. Here, a brief discussion of the pioneering work of Masters and Johnson is presented.

Anatomy. After the introduction comes a foundational section on sexual anatomy. This section is, itself, divided into three sub-sections: A) female sexual anatomy, B) male sexual anatomy, and C) sex and the brain. The first two sections are heavy with vocabulary and students might find the words confusing, difficult to pronounce or remember, embarrassing to say, or tough to pair with the respective functions of each part of anatomy. The portion that focuses on the brain emphasizes the fact that sex is not just an act related to the genitals. Its pleasures involve the nervous system and there are—in this instance—similarities in male and female nervous system function.

The consequences of sex. Although it is not labelled as such in the module, the next topics presented can broadly be thought of as consequences of sex. These include pregnancy (here, the related topic of birth control is also presented), and sexually transmitted infections (here,

the related topic of “safe sex” or “safer sex” is also presented).

Dysfunction. Finally, there is a section on common sexual dysfunctions and their treatments.

Difficult Terms

1 Note:
This module is particularly difficult in terms of vocabulary. This is because of the sheer volume of vocabulary, the difficulty of words (eg. Plethysmography), and the similarity of words (eg. Uterus versus urethra). The difficulty of the vocabulary can be compounded by the potentially sensitive or embarrassing nature of the material. Care should be taken to ensure students are able to focus on the most important vocabulary and learn it well.

Abstinence
Age of viability
Barrier forms of birth control
Bartholin's glands
Cervix
Chromosomal sex
Clitoris
Conception
Cowper's glands
Emergency contraception
Epididymis
Erogenous zones
Excitement phase
Fallopian tubes
Foreskin
Genetic sex
Glans penis
Hormonal forms of birth control
Introitus
Labia majora
Labia minora
Major vestibular glands

Menstruation
Minor vestibular glands
Mullerian ducts
Myotonia
Natural forms of birth control
Neuroimaging techniques
Oral sex
Orgasm phase
Orgasmic platform
Ovaries
Ovulation
Oxytocin
Plateau phase
Plethysmography
Primitive gonads
Prostate gland
Quickening
Refractory period
Resolution phase
Safer-sex practices
Scrotum
Seminal vesicles
Sexual dysfunctions
Sexual response cycle
Sexually transmitted infections
Skene's glands
Somatosensory cortex
Trimesters
Urethra
Uterus
Vas deferens
Vasectomy
Vulva
Wolffian ducts
Zygote

Lecture Frameworks

Overview: This material can be presented with a combination of direct instruction, discussion, and activities.

Warm-up Activity: Why is anatomy and physiology being taught in a psychology course?: The purpose of this slide is to get students to better understand why sexual anatomy and physiology are appropriate to a psychology class. The simplest way to achieve this is merely to point out that sex involves communication, relationship, emotional intimacy (sometimes), the nervous system, and many other topics that are fundamentally psychological in nature. To better achieve this try engaging the students in the warm-up activity about the vocabulary of sexual anatomy. See below in 'Activities/Demonstrations' and in the Noba PowerPoint for more details.

Direct Instruction of the Science of Human Sexual Anatomy and Physiology: There are multiple slides associated with this portion of the lesson.

- First, a slide about *Masters and Johnson*. Masters and Johnson are colorful figures, and widely regarded as pioneers in the study of sex. They used physiological methods to empirically investigate sexual function and behavior and were interested in de-mystifying this topic through science. Some students may be familiar with them because of the television show "Masters of Sex" (see additional resources, below). This slide is an opportunity to engage students in thinking about how sex and science interface. Consider possible small or large group discussions:
    - What can science tell us about sex that we cannot learn other ways?
    - Are there aspects of sex and sexual behavior that you believe should not or cannot be studied? What is your rationale?
    - What are the potential benefits of studying sexual anatomy and function scientifically?
    - What are some of the obstacles to effectively studying these topics scientifically?
- Second, a slide discussing the aspects of sexual behavior: pleasure and reproduction. This is a brief stop in the introduction: it is an opportunity to point out that sexual function is, in part, about reproduction; but that sexual behavior is also about producing physical and psychology pleasure, often in the absence of any intention to reproduce.

Direct Instruction - 3 core concepts in anatomy (female sexual anatomy, male sexual anatomy, the brain and sex): Here, instructors highlight three core concepts related to human sexual anatomy. These are often confusing to students because they include a number of difficult vocabulary words. You might consider focusing especially on core anatomy and its function,

with additional consideration of more trivial topics confined to homework, extra credit, or similar study as time allows. Female and male sexual anatomy can be taught using an activity: See below in 'Activities/Demonstrations' and in the Noba PowerPoint for more details.

- *Female Sexual Anatomy* = Female anatomy can seem confusing or mysterious. Typically, it is divided into external and internal organs. The primary functions of the *internal sex organs* of the female are to store, transport, and keep ovum cells (eggs) healthy; and produce hormones.
- *Male Sexual Anatomy* = The most prominent *external sex organ* for the male is the **penis**. The penis's main functions are initiating orgasm, and transporting semen and urine from the body. On average, a flaccid penis is about three and a half inches in length, whereas an erect penis is about five inches (Veale et al., 2015; Wessells, Lue & McAninch, 1996)
- Because it is here, with male and female sexual anatomy, that students are most likely to be A) embarrassed, B) confused, and C) overwhelmed by the vocabulary, feel free to take questions and answers. You might consider having students submit questions (anonymous or otherwise) about anatomy the week before this class lecture. This would give you an opportunity to sort the questions and answer the most common or interesting ones in this part of the lecture.

Direct Instruction of the Sexual Response Cycle: The SRC is composed of four phases:

- **Excitement:**Activation of the sympathetic branch of the autonomic nervous system defines the *excitement phase*; heart rate and breathing accelerates, along with increased blood flow to the penis, vaginal walls, clitoris, and nipples.
- **Plateau:** Blood flow, heart rate, and breathing intensify during the *plateau phase.* During this phase, often referred to as "foreplay," females experience an **orgasmic platform**—the outer third of the vaginal walls tightening—and males experience a release of pre-seminal fluid containing healthy sperm cells. This early release of fluid makes penile withdrawal a relatively ineffective form of birth control.
- **Orgasm:** The shortest but most pleasurable phase is the *orgasm phase*. After reaching its climax, neuromuscular tension is released and the hormone **oxytocin** floods the bloodstream—facilitating emotional bonding. Although the rhythmic muscular contractions of an orgasm are temporally associated with ejaculation, this association is not necessary because orgasm and ejaculation are two separate physiological processes.
- **Resolution:**The body returns to a pre-aroused state in the *resolution phase*. Males enter a **refractory period** of being unresponsive to sexual stimuli. The length of this period depends on age, frequency of recent sexual relations, level of intimacy with a partner, and

novelty. Because females do not have a refractory period, they have a greater potential—physiologically—of having multiple orgasms.

Direct Instruction of "the Consequences of Sexual Behavior": Sexual behavior, ranging from masturbation to intercourse, can have consequences. Many of these are psychological such as feelings (intimacy, regret, etc.). Some are physical. Because this module emphasizes the physiological aspects of sex, we focus more heavily on the physical consequences here. Note that physical consequences are also frequently accompanied by psychological shifts (e.g. Pregnancy causes dramatic shifts in identity). Although the module does not explicitly frame pregnancy, birth control, and Sexually Transmitted Infections (STIs) as "consequences of sexual behavior" it may be thematically helpful to cluster these topics in this way. There are three slides associated with this portion of the text:

- Slide: Pregnancy— Pregnancy is the gestation of a new human. It begins at conception, when a sperm fertilizes an ovum. It continues for 39-40 weeks and is divided into 13-week trimesters; each is associated with specific developmental milestones.

Stage/Weeks	Trimester	Development
Blastocyst then Zygote	1 (weeks 1-13)	Implanting in the uterus Early cell division
Embryo	Trimester 2 (weeks 14-26)	Hair Organs begin function Sex organs develop Age of viability (26th week)
Fetus	Trimester 3 (weeks 27-39)	Central Nervous System Eyes Teeth

- Slide: Birth control—Since antiquity, people have attempted to control the moment and rate at which they become pregnant and reproduce. Traditionally, this has been accomplished by refraining from sex during high-fertility times during a woman's menstrual

cycle, through withdrawal (male orgasm outside of the vagina), or through the administration of herbal remedies thought to block conception. In modern times, a number of more effective contraceptives have been invented such as condoms (latex acting as a physical barrier that prevents sperm from coming into contact with ova) and "the pill" (often a combination of estrogen and progesterone). There are a number of important issues related to birth control:

  - No method is 100% effective if people engage in sexual intercourse
  - Most of the methods do not protect against the transmission of sexually transmitted infections (barrier methods are the most effective in this regard)
  - Birth control is historically significant in that it is associated with female empowerment (women who control pregnancy are more likely to be able to choose their parenting burdens and balance parenting with other potential goals such as work outside the home)
  - Birth control is politically and morally controversial. Many people object to birth control methods as interfering with "nature." In particular, there are strong objections to forms of birth control that interfere with the viability of an already fertilized ovum. This is because many people consider "life to begin at conception."

- Slide: STIs: Sexually Transmitted Infections (formerly called "sexually transmitted diseases") are the result of multiple sexual partners. To give an idea of indirect exposure through sexual intercourse, imagine Person X has had 5 sexual partners, and they have each had 5 sexual partners. But those people have also had sexual partners, and so on. Counting to six degrees person X has indirectly been exposed to 19, 530 people. If person X had 10 partners, and her partners had 10 partners the exposure would jump to more than 1 million one hundred thousand. The result of all this exposure is the risk of STIs.
- STIs may be of particular concern to traditionally aged high school and college aged students. This is, in part, because of increasing attention to HPV (a virus linked to cervical cancer). According to the CDC, about 1 in 5 people between 18-59 is a carrier of the high-risk strand of HPV (in a 2014 study: 25% of all men in the US and 20% of all women).
- HIV, the virus that causes AIDS, is also noteworthy in that it emerged in the 1980s and has reached global epidemic proportions since that time. Although, in the US, almost 400 out of every 100,000 people has HIV—and 36.7 million people have been infected worldwide—it is also a case study of treatment. Research has examined the effectiveness of education programs, circumcising males, and treating HIV to dramatically extend the lifespan. See: **http://www.who.int/hiv/pub/guidelines/sex_worker/e...**

Direct Instruction of Sexual Dysfunctions and their Treatments: This final section is divided into two parts. The first deals with common fears related to sexual performance (which is, ultimately, about function and dysfunction). The second deals with commonly diagnosed dysfunctions in men and women, and their respective treatments.

- Slide: common fears— Here you can exhibit the list of common male and female fears. Note that these fears divide into identifiable categories: Some are related to 1) performance, while others are related to 2) anatomy or body image concerns, 3) pregnancy or infection, and 4) being forced to do something you are unwilling or uncomfortable doing. You may consider having students break into small groups and categorizing each of these fears (see also PowerPoint for this module) for the male and then—separately—for the female fears. Debrief questions:

    - Are men and women afraid of the same things? How are they alike or different in their fears?
    - Are the common fears equally distributed across the 4 categories? What does this tell

Sex Fears with highest average rating by gender	
Men	**Women**
(1) Your partner has an **STI**	**(1)** Your partner won't want to wear a **condom**
(2) Your partner won't have an **orgasm** or be satisfied	**(2)** Your partner has an **STI**
(3) The condom will break/sex will result in **unintended pregnancy**	**(3)** The condom will break/sex will result in **unintended pregnancy**
(4) You'll **ejaculate prematurely**	**(4)** Your partner will find your **naked body unattractive**
(5) Your partner will find your **naked body unattractive**	**(5)** Your partner will not take **"no"** for an answer
(6) You **won't be able** to perform	**(6)** Your partner will want to do something you're **not comfortable** with
(7) You are **bad at sex**	**(7)** An **embarrassing bodily function** will occur during sex
(8) Your **penis** is **too small**	**(8)** Your partner won't have an **orgasm** or be satisfied
(9) Your partner will think you are **inexperienced**	**(9)** You won't have an **orgasm** or be satisfied
(10) It will be a**wkward** after sex	**(10)** You are **bad at sex**

you?

- If a friend came to you and voiced one of these fears, how would you respond?

Note: Although the categorization described above is somewhat subjective, you can see clear differences between the concerns of males and females. Here is one possible way to categorize these fears. As can be seen, men are largely concerned with performance, while women harbor many concerns, including a unique set of concerns around consent.

	Body	Performance	Consequences	Consent
Men	2	6	2	0
Women	2	3	3	2

- Slide: Common dysfunctions - Sexual dysfunctions can affect both men and women, and people of all ages. There are a variety of causes for these, including purely psychological ones. According to the DSM, there are four *male-specific dysfunctions*:
  - delayed ejaculation
  - erectile disorder (ED)
  - male hypoactive sexual desire disorder
  - premature ejaculation (PE)
- There are three *female-specific dysfunctions*:
  - female orgasmic disorder
  - female sexual interest/arousal disorder
  - genito-pelvic pain/penetration disorder
- In this section, you can introduce these disorders and discuss their treatments.

Direct Instruction of the Conclusion: As always, the conclusion is an opportunity to summarize main themes, take final questions, and allow students an opportunity to reflect on their own

learning. Among the main themes of this module are:

- Science. Sexual anatomy, function and behavior can be studied scientifically. Doing so removes taboo and provides objective information that is testable and generalizable.
- Sex is physical and psychological. There is a connection between psychology and physiology and it is in the topic of sex that, perhaps, this relation can most easily be seen.
- Understanding the psychological dimensions of sex can help us educate and intervene in sexual topics. Understanding the psychology of sex can be beneficial. Examples: fears about sexual performance (and other issues) are psychological, pregnancy involves shifts in identity, intimate sex requires open communication, education programs about STIs are influenced by what we know about how people learn and how they are persuaded to engage in positive behavior change.

Activities & Demonstrations

Activity--Warm-up:

This activity is intended to break the ice on talking about sex and using language involved with sexual anatomy. It uses a metaphor and can be explored in-depth, and can be tied to other introductory messages such as the importance of studying sex (and the psychological dimensions of sex) scientifically.

- Time: 5 minutes
- Materials: none
- Instructions: Have students cluster in small groups and discuss the following prompt (see also the PowerPoint for this module): Imagine a world in which talking about cars was taboo. Parents felt embarrassed to bring up the topic and created fake words like "Fu-Fu" to refer to cars with their young children. Adults knew that cars are a fact of life, but avoided taking their children to gas stations or mechanics and rarely talked about cars in polite company. When children became teenagers, they had a natural curiosity about driving, but mostly had to sneak a quick drive when their parents weren't around. Discuss the various problems you see with this world? What might happen? Make a connection to how this is similar to the ways in which we treat sex, and words related to sexual anatomy.

- Debrief Questions:
    - In the imaginary scenario, what problems did you see connected with the idea that people were not able to openly discuss cars?
    - How do you see the metaphor of cars as being related to the way that we treat sex in modern society? What problems arise because of the way we treat sex as a taboo topic
    - How might you change this?

Activity--Female/ Male Sexual Anatomy:

This activity is an opportunity for students to reflect on their own baseline knowledge of sexual anatomy and to learn new terms.

- Time: 5 minutes
- Materials: Blank paper on which to draw and a pen or pencil
- Instructions: Have students retrieve a blank sheet of paper and something to draw with (ie, pen or pencil). Ask them to draw, from memory or imagination, male and female sexual anatomy. Have them label the various parts and write a word or two suggestive of the function of each. Direct them to include as many of the terms as are depicted in the PowerPoint Slide (see PowerPoint slides for this module). Reassure them that this is not an assessment of artistic ability but an opportunity to get a gauge on how accurately and completely they understand the anatomy of each sex.
- Possible Debrief Questions:
    - Was the anatomy of one or the other sex more difficult to remember and draw? If so, what are some possible reasons for this?
    - What have you learned from this activity? What will you do with that lesson?
    - Why might it be important to be able to label anatomy accurately and understand the function of each? What might be dangers in *not* being able to do so?

One-Minute Activity: Muddiest Point

- Time: 4 minutes

- Materials: PowerPoint slide, writing materials
- Directions: Project the PowerPoint slide and ask students to answer each prompt on the slide. Indicate that they will have one minute (timed) to complete their answer. At the end of each minute click the slide to advance to the next prompt (there are 3 total).
- You may choose to encourage students to review their responses outside of class time, to collect them as part of a course portfolio, or to hand them in for credit.

Outside Resources

Journal: The Journal of Sex Research
http://www.sexscience.org/journal_of_sex_research/

Journal: The Journal of Sexual Medicine
http://www.jsm.jsexmed.org/

Organization: Advocates for Youth partners with youth leaders, adult allies, and youth-serving organizations to advocate for policies and champion programs that recognize young people's rights to honest sexual health information; accessible, confidential, and affordable sexual health services; and the resources and opportunities necessary to create sexual health equity for all youth.
http://www.advocatesforyouth.org/

Organization: SIECUS - the Sexuality Information and Education Council of the United States - was founded in 1964 to provide education and information about sexuality and sexual and reproductive health.
http://www.siecus.org/

Organization: The Guttmacher Institute is a leading research and policy organization committed to advancing sexual and reproductive health and rights in the United States and globally.
https://www.guttmacher.org/

Video: 5MIweekly—YouTube channel with weekly videos that playfully and scientifically examine human sexuality.
https://www.youtube.com/channel/UCQFQ0vPPNPS-LYhlbKOzpFw

Video: Sexplanations—YouTube channel with shame-free educational videos on everything sex.
https://www.youtube.com/user/sexplanations

Video: YouTube - AsapSCIENCE
https://www.youtube.com/user/AsapSCIENCE

Web: Kinsey Confidential—Podcast with empirically-based answers about sexual questions.
http://kinseyconfidential.org/

Web: Sex & Psychology Web: Sex & Psychology—Blog about the science of sex, love, and relationships.
http://www.lehmiller.com/

Evidence-Based Teaching

Wiederman, M. W. (1998). A classroom demonstration to communicate vulnerability of contracting a sexually transmitted disease. *Teaching of Psychology, 25*(4), 282-285.

- Communicating the likelihood of contracting a sexually transmitted disease (STD) is an important objective for instructors teaching particular psychology courses. This article describes a classroom demonstration for stimulating consideration of personal vulnerability for contracting an STD during one's lifetime. The demonstration utilizes class participation, holds student interest, stimulates subsequent class discussion, and has resulted in generally positive feedback from students.

Kite, M. E. (1990). Defining normal sexual behavior: A classroom exercise. Teaching of Psychology, 17(2), 118-119.

Suggestions from the Society for Teaching's Introductory Psychology Primer

Links to ToPIX Materials

Gender and Sexuality in the classroom
http://topix.teachpsych.org/w/page/59606520/Gender%20and%20Sexuality%20in%20the%20classroom

Teaching Topics

Teaching The Most Important Course
https://nobaproject.com/documents/1_Teaching_The_Most_Important_Course.pdf

Content Coverage
https://nobaproject.com/documents/2_Content_Coverage.pdf

Motivating Students
https://nobaproject.com/documents/3_Motivating_Students_Tips.pdf

Engaging Large Classes
https://nobaproject.com/documents/4_Engaging_Large_Classes.pdf

Assessment Learning
https://nobaproject.com/documents/5_Assessment_Learning.pdf

Teaching Biological Psychology
https://nobaproject.com/documents/6_Teaching_Bio_Psych.pdf

PowerPoint Presentation

This module has an associated PowerPoint presentation. Download it at https://nobaproject.com//images/shared/supplement_editions/000/000/308/Human%20Sexual%20Anatomy%20and%20Physiology.pptx?1517257179.

About Noba

The Diener Education Fund (DEF) is a non-profit organization founded with the mission of re-inventing higher education to serve the changing needs of students and professors. The initial focus of the DEF is on making information, especially of the type found in textbooks, widely available to people of all backgrounds. This mission is embodied in the Noba project.

Noba is an open and free online platform that provides high-quality, flexibly structured textbooks and educational materials. The goals of Noba are three-fold:

- To reduce financial burden on students by providing access to free educational content
- To provide instructors with a platform to customize educational content to better suit their curriculum
- To present material written by a collection of experts and authorities in the field

The Diener Education Fund is co-founded by Drs. Ed and Carol Diener. Ed is the Joseph Smiley Distinguished Professor of Psychology (Emeritus) at the University of Illinois. Carol Diener is the former director of the Mental Health Worker and the Juvenile Justice Programs at the University of Illinois. Both Ed and Carol are award- winning university teachers.

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Contact Information:

Noba Project
www.nobaproject.com
info@nobaproject.com