

PURPOSE

To expand students' knowledge that ovulation is a regularly repeating process.

To introduce the importance of the hormones estrogen and progesterone for the health of the whole body.

LEARNING OBJECTIVES

By the end of the lesson students will be able to:

1. Understand the female body has a regularly occurring cycle.
2. Understand the basic functioning of the cycle, including menstruation.
3. Understand that the cycle is directly linked to hormones which are essential to overall health.

MATERIALS & RESOURCES

- **Lesson 5 teenFEMM** powerpoint
- **Worksheet: Healthy Cycles** (preparation needed) + Teachers' Answer Key
- **Worksheet: Seven Cycle Skill-Testing Questions** (preparation needed) + Teachers' Answer Key

VOCABULARY

- **Hormones:** Chemical signals that travel in the bloodstream, directing the activity of every system in the body.
- **Female Reproductive System:** The group of organs in the lower belly/pelvis that work together: in women, to mature an egg (the female cell of reproduction) and to develop a growing baby; in men, to produce sperm (the male cell of reproduction).
- **Ovulation:** When a mature egg is released from the ovary.
- **Ovulation Cycle:** The cycle in which the process of egg maturation and release from the ovary takes place, influenced by hormones.

- **Menstruation:** Each cycle, hormones cause the lining of the uterus to thicken. At the end of the cycle, the lining of the uterus breaks down and sheds, which is experienced as menstruation. (This is also referred to as the period.)

PREPARATION

- ☐ Print the **Healthy Cycles Worksheet** for each student.
- ☐ Print the **Seven Cycle Skill-Testing Questions Worksheet** for each student.

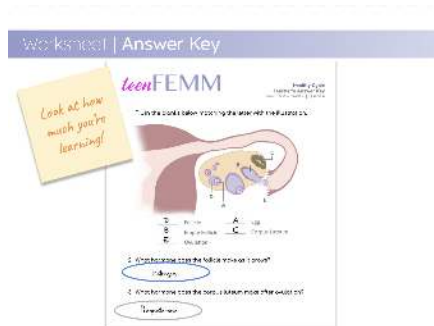
PROCEDURE

Step 1 (10 minutes): Healthy Cycle Worksheet

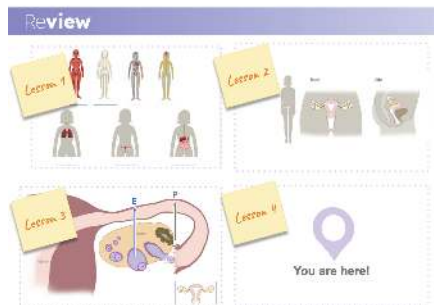
Hand out the **Healthy Cycle Worksheet** to students.



Give students a few minutes to complete their worksheet. Once students have finished, review the answers on the next slide or with the **Teacher's Answer Key** provided in the materials.



Step 2 (5 minutes): Review



We began teenFEMM Lesson 1 by learning about the body systems and how every system needs to be healthy for the whole body to be healthy. In Lesson 2, we zoomed in on the female reproductive system and the different parts of the system. In Lesson 3, we looked at the process of ovulation, and the two main female reproductive hormones produced in the ovary: estrogen and progesterone. Today, in Lesson 4, we will talk more about why the ovulatory cycle is so important to your overall health and the specific effects of estrogen and progesterone in the body.

Step 3 (10 minutes): Review the cycle

Hormones are controlled by the brain. The brain produces its own hormones (chemical messengers), which direct the ovaries, to produce other hormones (like estrogen).

Do you remember the 2 jobs of the ovaries?

1. To grow follicles and release an egg (ovulation).
2. To make the hormones estrogen and progesterone.

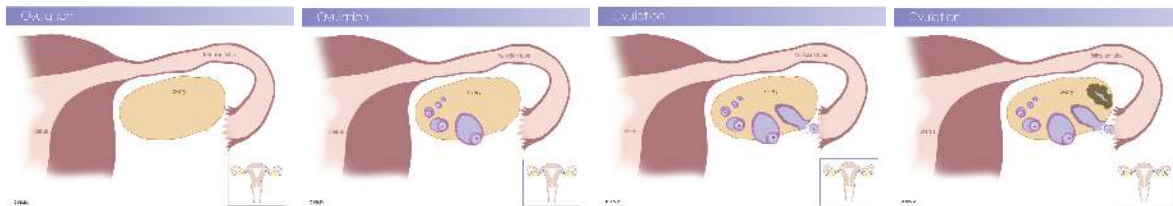
Your turn

What are the 🙌 main jobs of the ovaries?

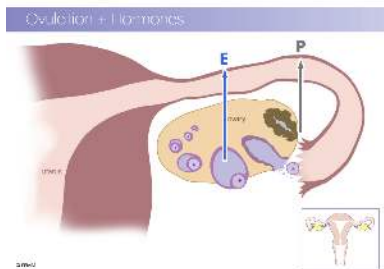
- 1 To grow follicles and release an egg 🥚
- 2 Produce **estrogen** ↑ + progesterone ↑

This process is called a ‘cycle’ because it repeats over and over again. Sort of like how a bike wheel doesn’t have a “start” and an “end” - it’s a continuum. At the “end” of one cycle is the period (the shedding of the uterine lining). This leads directly to the growth of a new follicle in the ovary and the cycle continues.

Teacher: Ask the students to explain again, in their own words, the ovulation cycle. Can you describe what happens in the ovary each cycle? Have students take turns explaining the ovulatory cycle with the following slides, to consolidate their learning.



You did a great job explaining the process. Ovulation is a sign of a healthy body, because it means that your hormones are working well and making all parts of the cycle happen properly.



Ask: The growing egg/follicle in the ovary makes _____? *Estrogen!*
After ovulation, the follicle is turned into the corpus luteum and makes which other hormone? *Progesterone!*

What happens to the egg after it is released from the ovary? It goes into the fallopian tube. Then, on its own, the egg will simply dissolve in a few hours. If the egg joins with the male cell of reproduction, sperm, through intercourse, the egg and sperm join together and a new life is created that will implant and grow in the uterus for 9 months.



But it's important to know that ovulation is not just necessary for pregnancy; month to month, it's a sign of health for you and your whole body. Your body needs all of your hormones to be healthy and work together, to impact every system of your body. Before we look at the impact of these hormones, let's do the **Seven Cycle Skill-Testing Questions Challenge!**

Step 4 (5 minutes): Seven Cycle Skill-Testing Questions



Arrange students in two groups. Provide each group with the **Seven Cycle Skill-Testing Questions Worksheet**, face down.

Explain to students that they have two minutes to complete the questions. For every question they get right, their team will get one point. For every question they get wrong, the other team will get a point. In the end, the team with the most points wins the challenge! *Ready? Set? Go!*

Review the answers together using the **Teachers' Answer Key** provided in the materials.

Step 5 (5 minutes): Effects of Estrogen and Progesterone + Menstruation

To better understand why ovulation is a sign of health, let's look at the effects of estrogen and progesterone (produced through the ovulatory cycle) and how these hormones impact *every part of your body*.

Effects of estrogen & progesterone

	estrogen	progesterone
uterus	tones, contracts	relaxes
uterine lining	grows	maintains
breasts	grows	normalizes
bones	forms	maintains
blood vessels	dilates, increases flow	relaxes, normalizes clotting
brain cells	stimulates	maintains and heals
well-being	normal levels promote well-being; high levels increase anxiety	promotes sleep and relaxation; decreases anxiety

Menstruation is normal and healthy. Period.

During the cycle, estrogen and progesterone build up and maintain the lining of the uterus. The lining of the uterus thickens during the cycle, to be able to provide a snug environment in case of pregnancy. But, without pregnancy, the corpus luteum (that produces progesterone in the ovary) breaks down and as a result, the lining in the uterus breaks down and sheds. This causes a few days of bleeding, and is called *menses*, which comes from a Latin word that means ‘month’.

CONCLUSION

Ovulation is a sign that a body is growing to full maturity. Ovulation is the release of the female cell of reproduction: the egg, from the ovary. Ovulation is a sign that your body is healthy. Now that we’ve learned what a healthy cycle is, next lesson we’ll learn how we can record specific characteristics of our ovulation cycle in order to know about our hormones and our health.

REFERENCES

- del Rio, J. & Alliende, I. & Molina, N. & Serrano, F. & Molina, S. & Vigil, P. (2018). Steroid hormones and their action in women's brains: The importance of hormonal balance. *Frontiers in Public Health*, 6, <https://doi.org/10.3389/fpubh.2018.00141>
- Vigil, P., Ceric, F., Cortés, M.E., & Klaus, H. (2006). Usefulness of monitoring fertility from menarche. *Journal of Pediatric Adolescent Gynaecology*, 19(3), 173-9. <https://doi.org/10.1016/j.jpag.2006.02.003>
- Vigil, P., del Rio, J., Carrera, B., Aranguiz, C., Rioseco, H. & Cortés Cortés, M. (2016). Influence of sex steroid hormones on the adolescent brain and behavior: An update. *The Linacre Quarterly*, 83, 308-329. <https://doi.org/10.1080/00243639.2016.1211863>